Appendix

C

HMP Species: Habitat and Distribution, Conservation Goals, Expected Impacts, and Basis of Take Authorization

1. *Acanthomintha ilicifolia*, San Diego Thorn-mint
(Narrow Endemic species)

a. Habitat/Distribution

San Diego thorn-mint is restricted to distribution to San Diego County and northern Baja California, Mexico (Skinner and Pavlik 1994; USFWS 1995). In San Diego County, the species is known from Carlsbad and San Marcos south to Sweetwater and Otay Mesa, and east to Alpine (Beauchamp 1986; USFWS 1995). Large populations occur in Carlsbad, Encinitas, San Marcos, Sycamore Canyon, Poway, the Lake Hodges area, El Capitan, and Jamul.

b. Conservation Goals

Conserved Habitat: A substantial acreage of grassland (37%) habitat and vernal pools will be conserved as a result of existing and proposed preserve design and application of the City's measures contained in Table 9. Within grassland habitat however, this species is restricted to specific micro-habitats and is not widespread. Because of the specialized micro-habitat requirements of this species, the analysis was not habitat-based.

Conserved Populations/Locations: It appears that within Carlsbad, there is a total of 13 point localities for this species; 7 are in existing open space, one is in proposed hard line open space and one is in a standards area. Four localities are outside of any proposed open space or standards areas. There are five identified major populations in Carlsbad: near the junction of El Camino Real and College Boulevard (in an existing hardline conservation area), south of Palomar Airport Road, i.e., BCS property; north of Alga Road, i.e., VLC property (in existing hardline conservation area); just west of San Marcos, i.e., Carrillo Ranch property (in proposed hardline conservation area); and north of Olivenhain (approximately 80% in hardline conservation area).

Because this species is a Narrow Endemic, it will be conserved at 100% level within the preserve, and will be avoided in the biological core and linkage areas, per the City's measures contained in Table 9.

Measures to Reduce Threats to Species' Survival: Management measures that will protect constituent species of vernal pool and grassland habitats will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel modification methods) will be used at a frequency and level sufficient to preclude catastrophic fire events and stimulate regeneration of the population.

Special Considerations: This species is an annual plant that may experience dramatic yearly fluctuations in population size and detectability. The species requires a clay soil substrate, and appears to require particularly a micro-habitat within that general category. It is susceptible to local extirpation by catastrophic fire and surface disturbance. Its breeding biology is that of and outcrosser. It is insect-pollinated and may rely on animal vectors for seed dispersal.

c. Expected Impacts

Although seven known sites will be conserved by the plan, there are at least four known localities where this species is outside the preserve. In addition, one major population will not be conserved within existing or proposed hardline conservation areas. An estimated 1140 acres (63%) of grassland habitat also may be subject to impacts outside preserve areas; however, this species is restricted to particular sites within grasslands. Potential impacts to

conserved populations may include direct or indirect impacts associated with edge effects, loss or alteration of watershed, and direct mortalities as a result of fire or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets the take authorization for this species due to: conservation of four of five known major populations; conservation of one of two additionally mapped smaller populations (50%); conservation of 37% of grassland habitat in preserved areas; application of measures contained in Table 9.

2. *Ambrosia pumila,* San Diego Ambrosia

(Narrow Endemic species)

a. Habitat/Distribution

Habitat/Distribution: San Diego ambrosia is restricted to western Riverside County, western San Diego County and northern Baja California, Mexico (Skinner and Pavlik; Wiggins 1980). In San Diego County, the species has been reported from scattered locations including Oceanside, Bonsall, Old Mission Dam Gorge area, Santee, Gillespie Field, and Sweetwater River. Within the MHCP, it has been reported from Oceanside and Bonsall. The species typically is associated with open coastal sage scrub, grassland, or disturbed habitats.

b. Conservation Goals

Conserved Habitat: An estimated 2164 acres (64 %) of coastal sage scrub and 667 acres (37%) of grassland will be conserved as a result of existing and proposed preserve design and application of the City's measures contained in Table 9.

Conserved Populations/Locations: No populations of this species have been identified in Carlsbad.

Measures to Reduce Threats to Species' Survival: Management measures that will protect constituent species to coastal sage scrub and grassland will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel modification methods) will be used at a frequency and level sufficient to preclude catastrophic fire events and stimulate regeneration of the population.

Species Considerations: This species is a wind-pollinated herbaceous perennial that reproduces asexually by rhizomes; presumably relies on animal vectors, in part, for seed dispersal; possibly tolerant of some surface disturbance; transplantation/reintroduction of rhizomes may be an effective way of enhancing populations (M. Sweesy, Dudek, pers. comm. 1998).

c. Expected Impacts

There are no known populations of this species in Carlsbad, and impacts consequently are not anticipated to occur. However, approximately 36% of the coastal sage scrub and 63% of grassland, which is potential habitat of the species, may be subject to impacts outside of preserve areas. Potential impacts may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent or catastrophic fire events, or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets the take authorization for this species due to conservation of large percentages of coastal sage scrub and grassland, (i.e., 54% of total habitat in the City) the preferred habitat of the species; the size, shape and habitat diversity of lands in the preserve; application of the City's measures contained in Table 9; and specific management measures intended to reduce threats to potentially occurring populations.

3. *Arctostaphylos glandulosa* ssp. *crassifolia*, Del Mar Manzanita

a. Habitat/Distribution

This species occurs on sandstone terraces and bluffs and is associated with southern maritime chaparral. Del Mar Manzanita is restricted to San Diego County and northwestern Baja California, Mexico (Skinner and Pavlik 1994; USFWS 1996a). In San Diego County, the species is found on coastal bluffs from Oceanside (south of San Luis Rey River, not mapped) south to La Jolla (Wells 1986), and inland to San Marcos, Lake Hodges, Los Peñasquitos Canyon, and possibly Miramar Reservoir. Within northern San Diego County, the plant is known to occur in Carlsbad, Encinitas, and San Marcos.

b. Conservation Goals

Conserved Habitat: An estimated 353 acres (88%) of southern maritime chaparral will be conserved as a result of existing and proposed preserve design and application of the City's measures contained in Table 9.

Conserved Populations/Locations: Two major populations of this species have been identified in Carlsbad, in the vicinity of Agua Hedionda Lagoon and Green Valley/Olivenhain. Both of these populations are considered critical locations. Approximately 83% of these major populations are proposed for conservation. This includes an estimated 80% of the Agua Hedionda population and 92% of the Green Valley/Olivenhain population. All of the conserved "points" in the preserve fall within one of these two major populations. Because this species is a Narrow Endemic, it will be conserved at a 100% level within the preserve, and will be avoided in biological core and linkage areas, per the City's measures contained in Table 9. Lands where this species is conserved are typically >50 acres in size and are contiguous with other native habitats. This configuration increases the probability that appropriate species-specific pollinators and seed dispersal agents will persist in the preserve.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel reduction methods) will be used at a frequency and level sufficient to preclude catastrophic fire events and stimulate regeneration of the population.

Special Considerations: This burl-forming, fire-adapted shrub occurs on sandstone terraces and bluffs in southern maritime chaparral. Individuals are typically long-lived. Flowers are insect- and bird-pollinated; the species may rely on animals, in part, for seed dispersal.

c. Expected Impacts

An estimated 15% of the major populations of this species in Carlsbad may be subject to impacts outside preserve areas. In addition, approximately 48 acres (12%) of southern

maritime chaparral, the preferred habitat of this species, may be subject to impacts outside preserve areas. Potential impacts to conserved populations may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent or catastrophic fire events, or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to substantial conservation of major populations and habitat; the size, shape, and habitat diversity of lands in the preserve that support or are adjacent to conserved, major populations; application of the City's measures contained in Table 9, which include avoidance of this species in biological core and linkage areas; and specific management measures intended to reduce identified threats to conserved populations.

4. *Baccharis vanessae,* Encinitas Baccharis

(Narrow Endemic species)

a. Habitat/Distribution

This species occurs in southern maritime chaparral and dense southern mixed chaparral. Encinitas Baccharis is a San Diego County endemic that is now limited to approximately 14 highly restricted populations throughout its range, including Encinitas, Carmel Mountain, Mt. Israel-Del Dios, 4S Ranch, Mt. Woodson-Iron Mountain, Poway (Van Dam Peak), and Mira Mesa (Beauchamp 1986; USFWS 1996a). The latter two locations consisted of one plant each as of 1987 and are too small to constitute viable populations. A small population was also recently detected in the southern Santa Ana Mountains in northern San Diego County (Boyd et al. 1993). Within northern San Diego County, this species is known only from Carlsbad and Encinitas.

b. Conservation Goals

Conserved Habitat: An estimated 1,054 acres of potential habitats for this species will be conserved as a result of existing preserve design and application of the City's measures contained in Table 9.

Conserved Populations/Locations: One major population of this species has been identified in Carlsbad, on the slopes above Green Valley. This is considered a critical location for this species. This entire population (100%) is proposed for conservation. An additional occurrence of this species in Carlsbad, which is not considered a major population, is also proposed for conservation. Because this species is a Narrow Endemic, it will be conserved at a 100% level within the preserve, and will be avoided in biological core and linkage areas, per the City's measures contained in Table 9. Lands where this species is conserved are typically >50 acres in size and contiguous or intermixed with other native habitats. This configuration increases the probability that appropriate species-specific pollinators will persist in the preserve.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel reduction methods) will be used at a frequency and level sufficient to preclude catastrophic fire events and stimulate regeneration of the population.

Special Considerations: This broom-like shrub is presumably fire-adapted, although the exact fire response mechanism is not known. Flowers are presumably insect-pollinated and seeds are presumably wind-dispersed.

c. Expected Impacts

All known occurrences of this species in Carlsbad will be conserved by the plan. An estimated 317 acres of preferred habitats for this species (48 acres of southern maritime chaparral and 269 acres of other chaparral types) may be subject to impacts outside preserve areas. Potential impacts to conserved populations may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent or catastrophic fire events, or activities associated with fire suppression.

d. Basis for Take Authorization

This species meets the take authorization standards due to complete (100%) conservation of the major population and its habitat; the size, shape, and habitat diversity of lands in the preserve that support or are adjacent to the conserved, major population; application of the City's measures contained in Table 9, which include avoidance of this species in biological core and linkage areas; and specific management measures intended to reduce identified threats to the conserved population.

5. *Brodiaea filifolia*, Thread-leaved Brodiaea

(Narrow Endemic species)

a. Habitat/Distribution

This species generally occurs in heavy clay soils in grasslands or vernal pools. Thread-leaved Brodiaea is known from Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties (Skinner and Pavlik 1994). In San Diego County, the species has been reported from Camp Pendleton, Oceanside, Carlsbad, Vista, San Marcos, and the 4S Ranch. Within the MHCP, the species currently occurs in Oceanside, Carlsbad, Vista, and San Marcos. The majority of remaining populations of this species are concentrated on the Santa Rosa Plateau in western Riverside County and in the MHCP area (USFWS 1994b). A total of ten populations are believed to occur in Carlsbad, including: Carlsbad Highlands; Newton Business Center; Fox property; Calavera Heights; La Costa Valley; Fieldstone Northwest; and Rancho Carrillo.

b. Conservation Goals

Conserved Habitat: A substantial acreage of grassland habitat (667 acres, 37%) and vernal pools (100%) will be conserved as a result of existing preserve design and application of the City's measures contained in Table 9. Within grassland habitat, however, this species is restricted to mesic locations. Because of these specialized micro-habitat requirements, the analysis for this species was not habitat-based.

Conserved Populations/Locations: Four major populations of this species have been identified and mapped in Carlsbad: at Calavera Heights, Carlsbad Highlands, Rancho Carrillo, and along El Camino Real (Fox property). All of these populations are considered critical locations. At least one additional major population has been identified in Carlsbad, but is not mapped. It is in Special Resource Area 2, within which the measures contained in Table 9 require avoidance of Narrow Endemic plant populations. Of the four major, mapped populations, all are proposed for conservation in their entirety. Smaller populations at Newton Business Center and Fieldstone Northwest will also be conserved. Because this species is a Narrow Endemic, it will be conserved at a 100% level within the preserve, and will be avoided in biological core and linkage areas, per the City's measures contained in Table 9. The City's measures contained in Table 9 provide additional protection for watersheds surrounding Narrow Endemics.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects adjacent to conserved populations (e.g., trampling, vehicular traffic, dumping, invasive exotic species); in some cases, this may require fencing. Management of edge effects will be particularly important for the Calavera Heights and the Carrillo Ranch populations. In addition, the watershed surrounding conserved populations will be conserved to maintain appropriate hydrological conditions for the species. To the extent feasible, populations will also be protected from fires and disturbances associated with fire suppression. Finally, small or declining populations will be enhanced by transplantation/introduction of corms, as necessary.

Special Considerations: This species generally occurs in heavy clay soils in grasslands or vernal pools. It is an herbaceous perennial from a corm, and reproduces asexually by producing corm offsets. Flowers are presumably insect-pollinated and seeds are presumably self-dispersed.

c. Expected Impacts

All of the identified major populations in Carlsbad will be conserved by the plan. An estimated 1,140 acres (63%) of grassland habitat may be subject to impacts outside preserve areas; however, this species is restricted to mesic areas within grasslands (or vernal pools). Potential impacts to conserved populations may include direct or indirect impacts associated with edge effects, loss or alteration of the watershed, and direct mortalities as a result of fire or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species due to complete (100%) conservation of major populations; additional protection afforded wetland habitat by federal and state regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

6. *Brodiaea orcuttii,* Orcutt's Brodiaea

(Narrow Endemic species)

a. Habitat/Distribution

The species generally occurs in vernal pools or along intermittent streams, meadows and swales in coastal, foothill and mountain areas of San Diego County and in northwestern Baja California, Mexico (Skinner and Pavlik 1994). Representative locations in the county include Carlsbad, San Marcos, Elfin Forest/Harmony Grove, Ramona, Cuyamaca, El Cajon Mountain, Kearny Mesa, Miramar, and Proctor Valley. One other population of unknown size occurs north of the Carlsbad Safety Center on a slope above Agua Hedionda Creek, apparently on County land.

b. Conservation Goals

Conserved Habitat: Nearly 100% of the identified vernal pools containing Orcutt's Brodiaea in Carlsbad will be conserved as a result of the existing preserve design (a dedicated open space easement as a result of a Corps 404 permit and CDFG 2081 permit at the NCTD Poinsettia Lane Commuter Rail Station) and application of the City's measures contained in Table 9. One other minor population, just west of El Camino Real, is conserved in hardline open space. In addition, vernal pool habitat that may contain Orcutt's brodiaea will be included in hardline open

space (i.e., Zone 15 Manzanita Partners property, east of El Camino Real). All other vernal pool habitat will be afforded protection through federal wetlands regulations, in conjunction with the City's no-net-loss of wetlands policy and application of measures contained in Table 9.

Conserved Populations/Locations: One major population of this species has been identified in Carlsbad, in the vernal pools near Poinsettia Lane (Zone 22). This population is considered critical, and is proposed for conservation in its entirety. In addition, this species typically occurs in wetland habitats, so it will receive additional protection outside the preserve per the federal wetland regulatory process, as well as the City's no-net-loss of wetlands policy. The City's measures contained in Table 9 provide additional protection for vernal pool watersheds.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects to the conserved population (e.g., trampling, vehicular traffic, dumping, invasive exotic species). This will require fencing; limiting pesticide, herbicide, and other chemical use in the vicinity; eradicating nonnative, competitive species; and preventing water pollution. In addition, the watershed surrounding the Poinsettia Lane population needs to be conserved to maintain appropriate hydrological conditions for the species. Finally, declining populations may be enhanced via introduction of appropriate plant materials, as necessary.

Special Considerations: This species is an herbaceous perennial that grows from a corm (i.e., bulb) by which it reproduces asexually by offsets. It presumably is insect-pollinated and seeds presumably are self-dispersed. Transplantation of corms may be an effective way to enhance populations. This species generally occurs in vernal pools.

c. Expected Impacts

The one major population in Carlsbad will be entirely conserved by the plan. Potential impacts to the conserved population may include direct or indirect impacts associated with edge effects and loss or alteration of the watershed. One small vernal pool on the Manzanita partners site (Zone 21) containing a minor population of Orcutt's brodiaea (estimated to contain 2 plants in 1998) will not be preserved.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species due to complete (100%) conservation of the one identified, major population and its habitat within the city (i.e., Poinsettia Lane vernal pools); conservation of one minor population (west of El Camino Real) and existing, known vernal pool habitat (Manzanita Partner property); additional protection afforded wetland habitat by federal and state regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

7. *Ceanothus verrucosus,* Wart-stemmed Ceanothus

a. Habitat/Distribution

This species is associated with southern maritime chaparral and southern mixed chaparral. It also forms nearly monotypic stands in some inland locations. Wart-stemmed ceanothus is limited to western San Diego County and Baja California, Mexico (Skinner and Pavlik 1994). In San Diego County, it is found on the immediate coast, from Carlsbad south to the U.S.-Mexico border. It also occurs inland towards San Marcos and Lake Hodges. Large populations occur in Carlsbad, Encinitas, Torrey Pines State Reserve, Carmel Mountain-Carmel Valley, San Marcos,

Escondido, and Point Loma. Smaller populations are known from Kearny Mesa-Clairemont Mesa-Miramar, Soledad, and Spooner's Mesa. Within the MHCP, this species occurs in Carlsbad, Encinitas, San Marcos, and Escondido.

b. Conservation Goals

Conserved Habitat: An estimated 1,054 acres (77%) of the potential habitat for this species will be conserved as a result of existing preserve design and application of the City's measures contained in Table 9.

Conserved Populations/Locations: Three major populations of this species have been identified in Carlsbad: (1) vicinity of Agua Hedionda Lagoon, (2) slopes surrounding Green Valley, and (3) south of Palomar Airport Road. None of these populations are considered critical locations. Approximately 90% of the major populations is proposed for conservation. This includes an estimated 95% of the Agua Hedionda population, 95% of the Green Valley population, and 78% of the Palomar Airport Road population. Lands where this species is conserved typically are >50 acres in size and contiguous with other native habitats. This configuration increases the probability that appropriate species-specific pollinators will persist in the preserve.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel reduction methods) will be used at a frequency and level sufficient to stimulate regeneration of the population.

Special Considerations: This evergreen shrub is a highly fire-adapted species whose fire response mechanism is seed germination from a persistent seedbank after exposure to intense heat. Flowers presumably are insect-pollinated and seeds are self-dispersed.

c. Expected Impacts

An estimated 10% of individuals in the major populations in Carlsbad may be subject to impacts outside preserve areas. Additional acreage of potential habitat for this species may be subject to impacts outside preserve areas. Potential impacts to conserved populations may include direct or indirect impacts associated with edge effects, and direct mortalities or population declines as a result of frequent fire events.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species because of substantial conservation of major populations (90%) and habitat (77%); the size, shape, and habitat diversity of lands in the preserve that support or are adjacent to conserved, major populations; application of the City's measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

8. *Chorizanthe orcuttiana*, Orcutt's Spineflower
(Narrow Endemic species)

a. Habitat/Distribution

This species occurs on southern maritime chaparral in one location in the MHCP study area: Oak Crest Park in Encinitas.

b. Conservation Goals

Conserved Habitat: An estimated 353 acres (88%) of southern maritime chaparral will be conserved as a result of existing preserve design and application of the City's measures contained in Table 9.

Conserved Populations/Locations: No populations of this species have been identified in Carlsbad; there is only one known population in the north county area.

Measures to Reduce Threats to Species' Survival: Management measures that will protect constituent species of southern maritime chaparral will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel modification methods) will be used at a frequency and level sufficient to preclude catastrophic fire events and stimulate regeneration of the population.

Special Considerations: This tiny annual is very difficult to detect in surveys and may experience yearly fluctuations in population size. Its response to fire is unknown. Plants are insect pollinated and seeds presumably are self-dispersed. It occurs on sandstone terraces and bluffs in southern maritime chaparral.

c. Expected Impacts

There are no known populations of this species in Carlsbad, and impacts consequently are not anticipated to occur. However, approximately 48 acres (12%) of southern maritime chaparral, which potentially is habitat of this species, may be subject to impacts outside the preserve areas. Potential impacts may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent or catastrophic fire events, or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to conservation of large percentages of the preferred habitat of the species (i.e., 88% of southern maritime chaparral); the size, shape and habitat diversity of lands in the preserve; application of the City's measures contained in Table 9; and specific management measures intended to reduce threats to potentially occurring populations.

9. *Comarostaphylis diversifolia* ssp. *diversifolia*, Summer Holly

a. Habitat/Distribution

This species is found in scattered locations in chaparral. Summer holly occurs in Orange, Riverside, and San Diego Counties, and in Baja California, Mexico (Skinner and Pavlik 1994). In San Diego County, the species is found along the coast from Carlsbad to the U.S.-Mexico border, and in inland locations from the San Marcos Mountains south to Otay Mountain. Within the MHCP, the species occurs in Carlsbad, Encinitas, San Marcos, and Escondido.

b. Conservation Goals

Conserved Habitat: An estimated 701 acres (72%) of potential habitat for this species will be conserved as a result of existing preserve design and application of the City's measures

contained in Table 9.

Conserved Populations/Locations: One major population of this species has been identified in Carlsbad, in the vicinity of Agua Hedionda Lagoon. This is not considered a critical location for this species. An estimated 76% of this population is proposed for conservation. Lands where this species is conserved are typically >50 acres in size and contiguous with other native habitats. This configuration increases the probability that species-specific pollinators and seed dispersal agents will persist in the preserve. This species is not a Narrow Endemic, and populations occur scattered throughout coastal San Diego County.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects associated with urban development (e.g., trampling, jvehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel reduction methods) will be used at a frequency and level sufficient to stimulate regeneration of the population.

Special Considerations: This fire-adapted shrub typically stump-sprouts from the base of the stem or root-crown after fire or cutting. Individuals tend to be long-lived and populations typically experience slow rates of individual turnover. Flowers are presumably insect-pollinated and seeds are animal-dispersed.

c. Expected Impacts

An estimated 24% of the major population in Carlsbad may be subject to impacts outside preserve areas. In addition, approximately 269 acres (28%) of preferred habitat for this species may be subject to impacts outside preserve areas. Potential impacts to the conserved population may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent fires.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species due to substantial conservation of the major population (76%) and habitat (72%); the size, shape, and habitat diversity of lands in the preserve that support or are adjacent to conserved, major populations; application of the City's measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

10. *Corethrogyne filaginifolia* var. *linifolia,* Del Mar Mesa Sand Aster

(Narrow Endemic species)

a. Habitat/Distribution

Del Mar Mesa Sand Aster is a San Diego County endemic that occurs along bluffs or brushy slopes near the coast from Carlsbad southward to Point Loma. Within the MHCP, the species occurs in several locations in Carlsbad and Encinitas. This species occurs on sandstone substrates where it is generally associated with coastal sage scrub or chaparral, including southern maritime chaparral.

b. Conservation Goals

Conserved Habitat: An estimated 353 acres (88%) of southern maritime chaparral will be conserved as a result of existing preserve design and application of the City's measures contained in Table 9.

Conserved Populations/Locations: One major population of this species has been identified in Carlsbad: Zone 19, near Batiquitos Lagoon and Zone 23 in the vicinity of Green Valley. No critical locations have been identified.

Of the eight mapped occurrences in the city, two are in hardline conservation areas, and one is adjacent to a hardline conservation area.

Because this species is a Narrow Endemic, it will be conserved at a 100% level within the preserve, and will be avoided in biological core and linkage areas, per the City's measures contained in Table 9.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel modification methods) will be used at a frequency and level sufficient to preclude catastrophic fire events and stimulate regeneration of the population.

Special Considerations: This perennial sub-shrub occurs on sandstone terraces and bluffs in southern maritime chaparral and coastal sage scrub. Individuals typically are relatively short-lived. The species probably is an obligate seeder rather than a vigorous stump-sprouter, and may invade disturbed soils readily.

c. Expected Impacts

Although no major populations of this species in Carlsbad will be subject to impacts outside preserve areas, some smaller populations will (approximately five of eight mapped occurrences). In addition, approximately 48 acres (12%) of southern maritime chaparral, may be subject to impacts outside the preserve areas. Potential impacts to conserved populations may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent or catastrophic fire events, or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species because the one major known population will be conserved in Green Valley within a hardline conservation area and habitat of this species is adequately conserved (i.e., 88% of southern maritime chaparral); the size, shape and habitat diversity of lands in the preserve that support or are adjacent to conserved populations; application of the City's measures contained in Table 9, which include avoidance of this species in biological core and linkage areas; and specific management measures intended to reduce identified threats to conserved populations.

11. *Dudleya blochmaniae* ssp. *blochmaniae*, Blochman's Dudleya

(Narrow Endemic species)

a. Habitat Distribution

This species typically is found on coastal bluffs in association with coastal scrub habitat. It also has been reported on rocky or clay soils. Blochman's Dudleya is found in San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Orange, and San Diego Counties, and in Baja California, Mexico. Despite its relatively widespread distribution, this species is known from fewer than 20 occurrences in California, and fewer than 5 occurrences in Baja California (Skinner and Pavlik 1994). In San Diego County, the species is found on Camp Pendleton, in Carlsbad,

(north of Palomar Airport), and in Oceanside, which are the only records for this species in the MHCP.

b. Conservation Goals

Conserved Habitat: A substantial amount of coastal scrub and grassland habitats will be conserved as a result of existing preserve design and application of the City's measures contained in Table 9. Because of specialized micro-habitat requirements, the analysis for this species was not habitat-based.

Conserved Populations/Locations: No major populations of this species have been identified in Carlsbad. One small population has been identified north of Palomar Airport Road on the Hieatt property., and is considered critical because it represents the southern-most known location for this species. This population has been proposed for conservation in its entirety by the HMP's standards for Zone 5.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects to the conserved population (e.g., trampling, vehicular traffic, dumping, invasive exotic species); fencing may be required. To the extent feasible, populations also will be protected from fires and disturbances associated with fire suppression. Finally, populations that are declining in size may be enhanced via introduction of appropriate plant materials, as necessary.

Special Considerations: This species typically occurs on coastal bluffs in association with coastal scrub habitats. It has also been reported from rocky and clay soils.

c. Expected Impacts

The only documented occurrence of this species in Carlsbad will be conserved entirely by the plan. An estimated 1,270 acres (40%) of preferred habitats for this species (3 acres [8%] of maritime succulent scrub and 1,267 acres [40%] of Diegan coastal sage scrub) may be subject to impacts outside preserve areas. Potential impacts to the conserved population may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of fires or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species due to conservation of the single-known Carlsbad population; application of the City's measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

12. *Dudleya viscida,* Sticky Dudleya

a. Habitat/Distribution

This species is found on dry, rocky slopes or cliffs and typically is associated with coastal sage scrub or chaparral. Sticky Dudleya occurs in Orange, Riverside, and San Diego Counties (Skinner and Pavlik 1994). In San Diego County, the species occurs on Camp Pendleton (San Mateo Creek, Stuart Mesa, bluffs at the mouth of the Santa Margarita River), Oceanside, Carlsbad, Escondido Creek, San Dieguito River Valley, and Santa Fe Valley. The Oceanside and Carlsbad locations fall within the MHCP.

b. Conservation Goals

Conserved Habitat: Because of specialized micro-habitat requirements, the analysis for this species was not habitat-based.

Conserved Populations/Locations: One major and critical population of this species occurs in Carlsbad, along San Marcos Creek. It lies entirely within the preserve area and is considered 100% conserved. Natural vegetation where this species is conserved is >50 acres in extent and contiguous with other native habitats. This configuration increases the probability that appropriate species-specific pollinators will persist in the preserve.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects to the conserved population (e.g., trampling, vehicular traffic, dumping); this may require fencing. Population(s) also will be protected from fires.

Special Considerations: This herbaceous perennial occurs on dry, rocky slopes or cliffs and is typically associated with coastal sage scrub or chaparral. Flowers are insect-pollinated and seeds are presumably self-dispersed.

c. Expected Impacts

The entire major population of this species in Carlsbad is included in the existing preserve design, and no individuals in this population are considered subject to take. Potential impacts to the conserved population may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent or catastrophic fire events.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species due to complete conservation of the one major population in the city; the size, shape, and habitat diversity of lands in the preserve that support and are adjacent to the conserved, major population; application of the City's measures contained in Table 9; and specific management measures intended to reduce identified threats to the conserved population.

13. *Eryngium aristulatum* var. *parishii*, San Diego Button-celery

(Narrow Endemic species)

a. Habitat/Distribution

This species is restricted to vernal pools. San Diego Button-celery is found in Riverside and San Diego Counties, and in Baja California, Mexico (Skinner and Pavlik 1994). In San Diego County, the species is found on Camp Pendleton, Carlsbad, San Marcos, Marine Corps Air Station Miramar, Kearny Mesa, Clairemont Mesa, and Chollas area, Otay Mesa (Beauchamp 1986; USFWS 1993; Ogden and Dudek 1994). Within northern San Diego County, it is limited to Carlsbad and San Marcos.

b. Conservation Goals

Conserved Habitat: All of the identified vernal pools in Carlsbad will be conserved as a result of existing preserve design and application of the City's measures contained in Table 9. The vernal pool habitat where this population is known to occur is protected in a conservation easement that resulted from the 404 and 2081 permits for the NCTD Poinsettia Lane Commuter Rail Station project. Because of specialized micro-habitat requirements, the

analysis for this species was not habitat-based.

Conserved Populations/Locations: One major population of this species has been identified in Carlsbad, in the vernal pools near Poinsettia Lane. This population is considered critical, and is proposed for conservation in its entirety. No other occurrences are known. Because this species is a Narrow Endemic, it will be conserved at a 100% level within the preserve, and will be avoided in biological core and linkage areas, per the City's measures contained in Table 9. In addition, this species typically occurs in wetland habitats, so will receive additional protection outside the preserve per federal wetland regulatory processes, as well as the City's no-net-loss of wetlands policy. The City's measures contained in Table 9 provide additional protection for watersheds surrounding Narrow Endemic species.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects to the conserved population (e.g., trampling, vehicular traffic, dumping, invasive exotic species). This will require: fencing; limiting pesticide, herbicide, and other chemical use in the vicinity; eradicating nonnative, competitive species; and preventing water pollution. In addition, the watershed surrounding the Poinsettia Lane population needs to be conserved to maintain appropriate hydrological conditions for the species. Finally, declining populations may be enhanced via introduction of appropriate plant materials, as necessary.

Special Considerations: This species is restricted to clay soils in vernal pools. Flowers are presumably insect-pollinated and seeds are self- and possibly animal-dispersed.

c. Expected Impacts

The one major population in Carlsbad will be conserved entirely by the plan. Potential impacts to the conserved population may include direct or indirect impacts associated with edge effects and loss or alteration of the watershed.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species due to the conservation of the identified, major population and its habitat; additional protection afforded wetland habitat (including watersheds) by federal regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

14. *Euphorbia misera,* Cliff Spurge

a. Habitat Distribution

Cliff Spurge is found in Orange, Riverside, and San Diego Counties, on San Clemente and Santa Catalina Islands in Los Angeles County, and on the mainland and Isla Guadalupe in Baja California, Mexico (Skinner and Pavlik 1994). In San Diego County, this species is known from Carlsbad, Point Loma, San Diego, Sweetwater Valley, and Otay Mesa. It also occurs across the border in the Tijuana Hills (Beauchamp 1986). The only reported location for this species in the MHCP is in Carlsbad. The species is apparently more common north and south of the MHCP. This species is found on rocky slopes and coastal bluffs in coastal scrub (e.g., coastal bluff scrub, maritime succulent scrub, coastal sage scrub).

b. Conservation Goals

Conserved Habitat: An estimated 33 acres (94%) of coastal bluff scrub and maritime succulent scrub will be conserved as result of existing preserve design and application of the City's measures contained in Table 9.

Conserved Populations/Locations: One population of this species has been identified as extant in Carlsbad; there are no major populations. The one recorded population is conserved within an existing hardline conservation area.

Measures to Reduce Threats to Species' Survival: Management measures that will protect constituent species to coastal bluff scrub and maritime succulent scrub will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel modification methods) will be used at a frequency and level sufficient to preclude catastrophic fire events and stimulate regeneration of the population.

Special Considerations: This species is a stem succulent shrub that presumably is not well-adapted to fire because of its succulence. It is insect-pollinated and seeds presumably are self-dispersed.

c. Expected Impacts

There is one reported small population of this species in Carlsbad located on the north shore of Agua Hedionda Lagoon in an existing hardline conservation area, and impacts consequently are not anticipated to occur. However, approximately 2 acres of coastal bluff scrub and maritime succulent scrub, which is potential habitat of the species, may be subject to impacts outside of preserve areas. Potential impacts may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent or catastrophic fire events, or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets the take authorization for this species due to: conservation of 94% of the preferred habitat of the species; conservation of the single known site of the species in Carlsbad; the size, shape and habitat diversity of lands in the preserve; application of the City's measures contained in Table 9; and specific management measures intended to reduce threats to potentially occurring populations.

15. *Ferocactus viridescens*, San Diego Barrel Cactus

a. Habitat/Distribution

San Diego Barrel Cactus is restricted to San Diego County and Baja California, Mexico (Skinner and Pavlik 1994). In San Diego County, the species occurs along the coastal slope from Oceanside south to the U.S.-Mexican border. Although the species was formerly widespread within its San Diego range, it now persists in numerous, fragmented populations. Approximately eight major populations of this species were identified in the MSCP study area; only two major populations have been documented in the MHCP. Within the MHCP, the species reportedly occurs in Oceanside (this population is not mapped) and in Encinitas. This species is primarily associated with maritime succulent scrub and coastal sage scrub, although it has also been documented in chaparral and grassland habitats.

b. Conservation Goals

Conserved Habitat: An estimated 3,200 acres (67%) of coastal sage scrub, chaparral and southern maritime chaparral will be conserved as result of existing preserve design and application of the City's measures contained in Table 9.

Conserved Populations/Locations: One population has been identified south of Palomar Airport Road, approximately 1 mile east of the Pacific Ocean. This population is within an existing hardline conservation area.

Measures to Reduce Threats to Species' Survival: Management measures that will protect constituent species to coastal bluff scrub and maritime succulent scrub will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel modification methods) will be used at a frequency and level sufficient to preclude catastrophic fire events and stimulate regeneration of the population.

Special Considerations: This species is a stem succulent shrub that presumably is not well-adapted to fire because of its succulence. It is insect-pollinated and seeds are animal-dispersed.

c. Expected Impacts

Given that the only known population within the City occurs within an existing hardline conservation area, no impacts to this species are expected to occur. However, approximately 33% of coastal sage scrub, chaparral and southern maritime chaparral, which is potential habitat of the species, may be subject to impacts outside of preserve areas. Potential impacts may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent or catastrophic fire events, or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets the take authorization for this species due to conservation of the one known population south of Palomar Airport Road within an existing hardline conservation area; conservation of large percentages of the preferred habitat of the species (i.e., 67% of coastal sage scrub, chaparral and southern maritime chaparral); the size, shape and habitat diversity of lands in the preserve; application of the City's measures contained in Table 9; and specific management measures intended to reduce threats to potentially occurring populations.

16. *Hazardia orcuttii*, Orcutt's Hazardia

(Narrow Endemic species)

a. Habitat/Distribution

This species occurs in southern maritime chaparral in one location in the United States: Lux Canyon in the City of Encinitas. Its primary distribution is northwestern Baja California, Mexico (Wiggins DATE).

b. Conservation Goals

Conserved Habitat: An estimated 353 acres (88%) of southern maritime chaparral will be

conserved as a result of existing preserve design and application of the City's measures contained in Table 9.

Conserved Populations/Locations: No populations of this species have been identified in Carlsbad; there is only one known population in the north county area (i.e., Lux Canyon in Encinitas).

Measures to Reduce Threats to Species' Survival: Management measures that will protect constituent species of southern maritime chaparral will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel modification methods) will be used at a frequency and level sufficient to preclude catastrophic fire events and stimulate regeneration of the population.

Special Considerations: This shrub presumably is adapted to fires, is insect-pollinated and seeds presumably are animal-dispersed. It occurs on sandstone terraces and bluffs in southern maritime chaparral.

c. Expected Impacts

There are no known populations of this species in Carlsbad, and impacts consequently are not known to occur. However, approximately 48 acres (12%) of southern maritime chaparral, which potentially is habitat of this species, may be subject to impacts outside the preserve areas. Potential impacts may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent or catastrophic fire events, or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to conservation of large percentages of the preferred habitat of the species (i.e., 88% of southern maritime chaparral); the size, shape and habitat diversity of lands in the preserve; application of the City's measures contained in Table 9; and specific management measures intended to reduce threats to potential populations.

17. *Iva hayseiana,* San Diego Marsh-elder

a. Habitat/Distribution

This species is found in moist or alkaline places in the coastal region, particularly along intermittent streams. San Diego marsh-elder is restricted to southwestern San Diego County and northern Baja California, Mexico (Skinner and Pavlik 1994). In San Diego County, this species occurs from San Marcos south to the U.S.-Mexico border, with reported localities including San Marcos Creek, Encinitas Creek, Escondido Creek, San Dieguito River Valley, San Elijo Lagoon, Rancho Santa Fe, Los Peñasquitos Canyon, Proctor Valley, Otay River Valley, Tijuana River Valley, and Otay Mesa, among others (Beauchamp 1986; Ogden and Dudek 1994). Within the MHCP, this species occurs in Carlsbad and San Marcos.

b. Conservation Goals

Conserved Habitat: Determination of conserved habitat is difficult for this species, because it has the potential to occur in limited areas of several habitat types. Nonetheless, it is

estimated that 14 acres (100%) of the most likely habitat for this species (cismontane alkali marsh) will be conserved as a result of existing preserve design and application of the City's measures contained in Table 9. In addition, 293 acres (80%) of other potential habitat types (189 acres [88%] of freshwater marsh and 104 acres [68%] of disturbed wetland) will be similarly conserved by the plan.

Conserved Populations/Locations: Two major populations of this species have been identified in Carlsbad, along San Marcos Creek and Encinitas Creek. Both of these populations are considered critical locations. Approximately 70% of these populations are estimated to be conserved based on an analysis of point localities. However, it is likely that these populations will be 100% conserved based on site-specific avoidance and management guidelines. In addition, this species will receive additional protection outside the preserve per the federal and state wetland regulatory processes, as well as the City's no-net-loss of wetlands policy.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects to the conserved populations (e.g., trampling, vehicular traffic, dumping, invasive exotic species). In addition, the watershed surrounding the conserved populations needs to be conserved to maintain appropriate hydrological conditions for the species. Finally, enhancement of declining populations via introduction of appropriate plant materials may be conducted, as necessary. This may be particularly important for the San Marcos Creek population.

Special Considerations: This species is found in moist or alkaline places (e.g., along intermittent streams). It is grown successfully on a commercial basis. This species is not a Narrow Endemic, and populations occur scattered throughout coastal San Diego County.

c. Expected Impacts

An estimated 30% of the individuals in the major populations in Carlsbad may be subject to impacts outside preserve areas. Although habitat impacts are difficult to quantify, all of the cismontane alkali marsh (14 acres), the preferred habitat for this species, is conserved by the plan. An estimated 74 acres (20%) of other potential habitats for this species (25 acres [12%] of freshwater marsh and 49 acres [32%] of disturbed wetland) may be subject to impacts outside preserve areas. Potential impacts to conserved populations may include direct or indirect impacts associated with edge effects and loss or alteration of the watershed. In addition, clearing of vegetation in stream channels for flood control may remove a yet unquantified amount of this species' populations or individuals.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species because of substantial conservation of major populations 70%); the most potential habitat (100%); and other potential habitat (80%), in conjunction with additional protection afforded wetland habitat by federal and state regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

18. *Muilla clevelandii,* San Diego Goldenstar
(Narrow Endemic species)

a. Habitat/Distribution

This species generally occurs in heavy clay soils in grasslands. San Diego Goldenstar is endemic to San Diego County (Skinner and Pavlik 1994) where it has been reported from Carlsbad, San Diego, Rancho Bernardo, Poway, and Otay. Within the MHCP, the species currently occurs only in Carlsbad. Carlsbad has been identified as a major and critical population. The majority of remaining populations of this species are concentrated on Kearny Mesa, Miramar, Santee, Morena, and Otay.

b. Conservation Goals

Conserved Habitat: A substantial acreage of grassland habitat (37%) will be conserved as a result of existing preserve design and application of the City's measures contained in Table 9. Within grassland habitat, however, this species is restricted to localities within the Villages of La Costa.

Conserved Populations/Locations: One major population of this species has been identified and mapped in Carlsbad: west and east of Rancho Santa Fe Road in the Villages of La Costa. This population is considered a critical location. Of the 23 mapped points, it appears that 19 are within development areas and 4 are within hardline open space.

Although conservation of this species cannot be considered substantial, it was determined as part of the Fieldstone HCP and cannot be altered. It is the intention of the City to enforce avoidance of this species through its designation as a Narrow Endemic. Furthermore, the proposed preserved portion of the Villages of La Costa population will be managed with the goal of sustaining the population in perpetuity.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects adjacent to conserved populations (e.g., trampling, vehicular traffic, dumping, invasive exotic species); in some cases, this may require fencing. To the extent feasible, populations will also be protected from fires and disturbances associated with fire suppression. Finally, small or declining populations will be enhanced by transplantation/introduction of corms, as necessary.

Special Considerations: This species generally occurs in heavy clay soils in grasslands. It is an herbaceous perennial from a corm, and reproduces asexually by producing corm offsets. Flowers are presumably insect-pollinated and seeds are presumably self-dispersed.

c. Expected Impacts

Approximately 85% of the one identified major population in Carlsbad will impacted by development associated with implementation of the Fieldstone HCP. An estimated 1,140 acres (63%) of grassland habitat may be subject to impacts outside preserve areas; although this species may potentially occur in grasslands, it is not known to occur in the above mentioned 1,140 acres of grasslands. Potential impacts to the conserved population may include direct or indirect impacts associated with edge effects, loss or alteration of the watershed, and direct mortalities as a result of fire or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species due to conservation (17%) of the one known major population; conservation of 37% of grassland, the preferred habitat of the species; application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

19. *Myosurus minimum* ssp. *apus,* Little Mousetail

(Narrow Endemic species)

a. Habitat/Distribution

This species is found in vernal pools. Little Mousetail has a relatively widespread distribution, occurring in Butte, Colusa, Solano, Contra Costa, Alameda, Stanislaus, Kern, Riverside, San Bernardino, and San Diego Counties, as well as in Oregon and Baja California, Mexico (Skinner and Pavlik 1994). In San Diego County, the species is restricted to Camp Pendleton (Stuart Mesa, Wire Mountain), Carlsbad, Ramona, the mesas north of San Diego, and Otay Mesa. Only the Carlsbad location falls within the MHCP.

b. Conservation Goals

Conserved Habitat: All of the identified vernal pools containing this species in Carlsbad will be conserved as a result of the existing preserve design and application of the City's measures contained in Table 9. The vernal pool habitat in which the documented population occurs is protected in a conservation easement that resulted from the 404 and 2081 permits on the NCTD Poinsettia Lane Commuter Rail Station. In addition, other identified vernal pool habitat on the Manzanita Partners project site east of El Camino Real is proposed as hardline open space. In addition, vernal pool habitat not identified by this plan will be afforded additional protection through federal wetlands regulations, in conjunction with the City's no-net-loss of wetlands policy and application of measures contained in Table 9.

Conserved Populations/Locations: One major population of this species has been identified in Carlsbad, in the vernal pools near Poinsettia Lane. This population is considered critical, and is proposed for conservation in its entirety. Little Mousetail also was reported to occur in the vernal pools east of El Camino Real on the Manzanita Partners project site, its occurrence has been verified recently. This area is within proposed hardine open space. Because this species is a Narrow Endemic, it will be conserved at a 100% level within the preserve, and will be avoided in biological core and linkage areas, per the City's measure contained in Table 9. In addition, this species typically occurs in wetland habitats, so it will receive additional protection outside the preserve per the federal wetland regulatory processes, as well as the City's no-net-loss of wetlands policy. The City's measures contained in Table 9 provide additional protection for watersheds surrounding Narrow Endemic species.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects to the conserved population (e.g., trampling, vehicular traffic, dumping, invasive exotic species). This may require fencing; limiting pesticide, herbicide, and other chemical use in the immediate vicinity; eradicating nonnative, competitive species; and preventing water pollution. In addition, the watershed surrounding the Poinsettia Lane population needs to be conserved to maintain appropriate hydrological conditions for the species. Finally, declining populations may be enhanced via introduction of appropriate plant materials, as necessary.

Special Considerations: This small, tufted annual species is found in vernal pools. Flowers are presumably insect-pollinated and seeds are self- and possibly animal-dispersed.

c. Expected Impacts

The one major population in Carlsbad will be conserved entirely by the plan. Potential impacts to the conserved population may include direct or indirect impacts associated with edge effects and loss or alteration of the watershed.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species due to complete (100%) conservation of the identified, major population and its habitat; additional protection afforded wetland habitat by federal and state regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

20. *Navarretia fossalis,* Prostrate Navarretia

(Narrow Endemic species)

a. Habitat/Distribution

The species generally occurs in vernal pools or roadside depressions. Prostrate Navarretia occurs in western Riverside and southwestern San Diego Counties, and in northwestern Baja California, Mexico (Skinner and Pavlik 1994; USFWS 1994b). Historically, Prostrate Navarretia occurred in relatively few of the San Diego County vernal pools. In San Diego County, this species is found below 450-meter elevation in Carlsbad, San Marcos, Ramona, and Otay Mesa.

b. Conservation Goals

Conserved Habitat: All of the identified vernal pools containing Prostrate Navarretia in Carlsbad will be conserved as a result of the existing preserve design and application of the City's measures contained in Table 9. The vernal pool habitat in which the population occurs is in an existing conservation easement that was established as a result of the 404 and 2081 permit processes for the NCTD Poinsettia Lane Commuter Rail Station project. In addition, vernal pool habitat not identified by this plan will be afforded additional protection through federal wetlands regulations, in conjunction with the City's no-net-loss of wetlands policy and application of measures contained in Table 9.

Conserved Populations/Locations: One major population of this species has been identified in Carlsbad, in the vernal pools near Poinsettia Lane. There are no other known occurrences. This population is considered critical, and is proposed for conservation in its entirety. Because this species is a Narrow Endemic, it will be conserved at a 100% level within the preserve, and, if a new population is found, will be avoided in biological core and linkage areas, per the City's measures contained in Table 9. In addition, this species typically occurs in wetland habitats, so will receive additional protection outside the preserve per the federal wetland regulatory processes, as well as the City's no-net-loss of wetlands policy. The City's measures contained in Table 9 provide additional protection for watersheds surrounding Narrow Endemic species.

Measures to Reduce Threats to Species' Survival: Management measures will focus on

minimizing edge effects to the conserved population (e.g., trampling, vehicular traffic, dumping, invasive exotic species). This will require: fencing; limiting pesticide, herbicide, and other chemical use in the vicinity; eradicating nonnative, competitive species; and preventing water pollution. In addition, the watershed surrounding the Poinsettia Lane population needs to be conserved to maintain appropriate hydrological conditions for the species. Finally, declining populations may be enhanced via introduction of appropriate plant materials, as necessary.

Special Considerations: This annual species generally occurs in vernal pools or roadside depressions. It is presumably self-breeding and seeds are presumably self-dispersed.

c. Expected Impacts

The one major population in Carlsbad will be conserved entirely by the plan. Potential impacts to the conserved population may include direct or indirect impacts associated with edge effects and loss or alteration of the watershed.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species due to complete (100%) conservation of the one identified, major population and its habitat within the city; additional protection afforded wetland habitat by federal regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

21. *Orcuttia californica,* California Orcutt Grass

(Narrow Endemic species)

a. Habitat/Distribution

This species is found in or near vernal pools. California Orcutt Grass is currently found in Ventura, Riverside, and San Diego Counties, and Baja California, Mexico. It is apparently extirpated from Los Angeles County and is currently reported from fewer than 20 locations throughout its range (Skinner and Pavlik 1994). In San Diego County, California Orcutt Grass is known from below 200-meter elevation on the coastal mesas, with reported localities including Carlsbad, Marine Corps Air Station Miramar and Otay Mesa (J. Brown, pers. comm.; Beauchamp 1986).

b. Conservation Goals

Conserved Habitat: All of the identified vernal pools containing California Orcutt Grass in Carlsbad will be conserved as a result of the existing preserve design and application of the City's measures contained in Table 9. The vernal pool habitat in which the population occurs is in an existing conservation easement that is the result of the NCTD Commuter Rail Station 404 and 2081 permitting processes. In addition, vernal pool habitat not identified by this plan will be afforded additional protection through federal wetlands regulations, in conjunction with the City's no-net-loss of wetlands policy and application of measures contained in Table 9.

Conserved Populations/Locations: One major population of this species has been identified in Carlsbad, in the vernal pools near Poinsettia Lane. There are no other known occurrences. This population is considered critical, and is proposed for conservation in its entirety. Because this species is a Narrow Endemic, it will be conserved at a 100% level

within the preserve, and if a new population is found, will be avoided in biological core and linkage areas, per the City's measures contained in Table 9. In addition, this species typically occurs in wetland habitats, so it will receive additional protection outside the preserve per the federal wetland regulatory process, as well as the City's no-net-loss of wetlands policy. The City's measures contained in Table 9 provide additional protection for watersheds surrounding Narrow Endemic species.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects to the conserved population (e.g., trampling, vehicular traffic, dumping, invasive exotic species). This will require: fencing; limiting pesticide, herbicide, and other chemical use in the immediate vicinity; eradicating nonnative, competitive species; and preventing water pollution. In addition, the watershed surrounding the Poinsettia Lane population needs to be conserved to maintain appropriate hydrological conditions for the species. Finally, declining populations may be enhanced via introduction of appropriate plant materials, as necessary.

Special Considerations: This annual grass species occurs in vernal pools. Flowers are wind-pollinated and the species may possess a mixed breeding system.

c. Expected Impacts

The one major population in Carlsbad will be conserved entirely by the plan. Potential impacts to the conserved population may include direct or indirect impacts associated with edge effects and loss or alteration of the watershed.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species due to complete (100%) conservation of the one identified, major population and its habitat within the city; additional protection afforded wetland habitat by federal regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

22. *Pinus torreyana* ssp. *torreyana*, Torrey Pine

a. Habitat/Distribution

This species typically occurs in Torrey Pine forest or as inclusions in southern maritime chaparral. It also is used extensively in landscaping, and some individual trees in outlying locations may have been planted. Torrey Pine may be the most restricted pine species in California; subspecies *torreyana* occurs only along the coast of San Diego County near Del Mar. The major population of this subspecies occurs in Torrey Pines State Reserve (including the extension), where it is protected and managed. Smaller stands and/or scattered individuals occur in Carlsbad, Encinitas, Del Mar, Carmel Mountain, and the San Dieguito River Valley. Within the MHCP, this species is restricted to Carlsbad and Encinitas.

b. Conservation Goals

Conserved Habitat: Torrey Pine woodland does not occur in Carlsbad.

Conserved Populations/Locations: No major populations or critical locations of this species occur in Carlsbad. This species is known from two locations in Carlsbad. One of

these consists of scattered individuals, while the other is apparently a tree farm or plantation. Both locations are in areas proposed for conservation. The major population center for this species lies south of Carlsbad, along the coast of San Diego County near Del Mar, where the majority of naturally-occurring Torrey Pine trees is protected and managed in Torrey Pines State Reserve.

Measures to Reduce Threats to Species' Survival: None.

Special Considerations: Torrey Pine is a wind-pollinated coniferous tree that may be self-fertile. It has been shown to possess extremely low genetic variability. Seeds are heavy and nearly wingless, so dispersal is limited. It is susceptible to insect infestations, particularly under prolonged drought conditions.

c. Expected Impacts

All of the individuals identified in Carlsbad will be conserved by the plan. Torrey Pine woodland, has not been mapped in Carlsbad; however, the species can occur scattered in southern maritime chaparral. An estimated 48 acres (12%) of southern maritime chaparral in Carlsbad may be subject to impacts outside preserve areas.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species because of the complete conservation of individuals, conservation of a substantial portion of potential habitat (88%); and application of the City's measures contained in Table 9.

23. *Quercus dumosa*, Nuttall's Scrub Oak

a. Habitat/Distribution

Nuttall's Scrub Oak has a disjunctive distribution that includes Santa Barbara, Orange, and San Diego Counties (Skinner and Pavlik 1994). The species also occurs southward to the Punta Banda region of Baja California, Mexico (F. Roberts pers. comm.). In San Diego County, Nuttall's Scrub Oak has been documented below 500-meters elevation in Carlsbad, Encinitas, Questhaven, San Dieguito County Park, Del Mar, Carmel Valley and Miramar. The Carlsbad and Encinitas locations occur in the MHCP. It should be noted that this species was only recently described, and its full distributional range has yet to be defined. This species generally occurs in sandy soils near the coast, in association with southern maritime chaparral and coastal sage scrub.

b. Conservation Goals

Conserved Habitat: An estimated 353 acres (88%) of southern maritime chaparral will be conserved as a result of existing preserve design and application of the City's measures contained in Table 9.

Conserved Populations/Locations: Two major and critical populations of this species have been identified in Carlsbad and both are completely in proposed hardline conservation areas north of Palomar Airport Road, east of El Camino Real. These are considered critical locations. All of the major populations are proposed for conservation within hardline preserves. There are eight other locations mapped in the city: 2 are preserved in hardline open space and 3 are adjacent to hardline conservation areas.

All of the conserved "points" fall within the preserve, and will be avoided in biological core and linkage areas, per the City's measures contained in Table 9. The areas where this species is conserved typically are greater than 50 acres in size and are contiguous with other native habitats. This configuration increases the probability that appropriate species-specific pollinators and seed dispersal agents will persist in the preserve.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects associated with urban development (e.g., trampling, vehicular traffic, dumping, invasive exotic species) and protecting the species against frequent or catastrophic fires. Controlled burns (or other fuel modification methods) will be used at a frequency and level sufficient to preclude catastrophic fire events and stimulate regeneration of the population.

Special Considerations: This fire-adapted shrub occurs on sandstone terraces and bluffs in southern maritime chaparral, southern mixed chaparral and coastal sage scrub. Individuals are typically long-lived. The species may rely on animals, in part, for seed dispersal.

c. Expected Impacts

Although no major populations of this species in Carlsbad will be subject to impacts outside preserve areas, some smaller populations (approximately three of eight mapped localities) will be impacted. In addition, approximately 48 acres (12%) of southern maritime chaparral may be subject to impacts outside the preserve areas. Potential impacts to conserved populations may include direct or indirect impacts associated with edge effects, and direct mortalities as a result of frequent or catastrophic fire events, or activities associated with fire suppression.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to conservation of the all of the major populations within proposed hardline conservation areas; conservation of approximately 63% of other small populations documented within the city; conservation of 88% of southern maritime chaparral, the preferred habitat of the species; the size, shape and habitat diversity of lands in the preserve that support or are adjacent to the conserved, major populations; application of the City's measures contained in Table 9, which include avoidance of this species in biological core and linkage areas; and specific management measures intended to reduce identified threats to conserved populations.

24. *Quercus engelmannii,* Engelmann Oak

a. Habitat/Distribution

This species occurs in canyons and on open slopes in foothill and coastal regions, where it is associated with Engelmann Oak woodland, chaparral, and grassland. Engelmann Oak occurs in Los Angeles, Orange, Riverside, and San Diego Counties, on Santa Catalina Island (one tree), and in Baja California, Mexico (Skinner and Pavlik 1994). In San Diego County, the species occurs primarily east of the MHCP, from the Santa Margarita Mountains on the Riverside-San Diego County border southward towards Dulzura, and east to the desert slope. Large populations are found in Pala, Lake Wohlford, Twin Flats, Boden Canyon, Clevenger Canyon, Escondido, Valley Center, Ramona, and Featherstone Canyon. In fact, over 90% of the remaining stands of this species are estimated to occur in San Diego County (Pavlik et al. 1991). Within the MHCP, small stands and/or individual trees are found in Carlsbad (e.g., south and east of Canyon de las Encinas), and larger stands occur in Escondido (Oak Hills, Dixon Lake).

b. Conservation Goals

Conserved Habitat: A significant amount of oak woodland in Carlsbad will be conserved as a result of the existing preserve design and application of the City's no-net-loss of oak woodlands policy and measures contained in Table 9. However, this acreage includes little, if any, Engelmann Oak woodland.

Conserved Populations/Locations: No major populations or critical locations of this species have been identified in Carlsbad. Five occurrences, consisting of individual trees or small stands of trees, have been documented along El Camino Real and south of Palomar Airport Road. The majority of these occurrences are in areas proposed for conservation. Within the preserve, Engelmann Oak occurs as inclusions in scrub and chaparral habitats, and does not constitute Engelmann Oak woodland. The major distribution of this species lies east of Carlsbad.

Measures to Reduce Threats to Species' Survival: Management of Engelmann Oaks within the preserve will fall under the guidelines of the City's oak protection policy.

Special Considerations: This evergreen tree typically occurs in canyons and on open slopes. Seedlings are fire-tolerant, whereas mature trees are fire-sensitive. Flowers are wind-pollinated and seeds (acorns) are self- and animal-dispersed.

c. Expected Impacts

Of the five documented occurrences of this species in Carlsbad, one may be subject to impacts outside preserve areas. In addition, an estimated 2 acres (7%) of oak woodlands in Carlsbad may be subject to impacts outside preserve areas. However, this acreage includes little, if any, Engelmann Oak woodland.

d. Basis for Take Authorization

The HMP meets the take authorization standards for this species because of the substantial conservation of individuals (80%); application of the City's no-net-loss of oak woodlands policy and measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

25. *Euphyes vestris harbisoni*, Harbison's Dun Skipper

a. Habitat/Distribution

Harbison's Dun Skipper is a medium-small chocolate-brown butterfly restricted to riparian habitats where its larval host San Diego sedge (*Carex spissa*) grows in the company of poison oak (*Toxicodendron diversilobum*). Typical habitat is canyon bottoms, creeks, and seeps beneath the shade of oak trees. The butterfly occurs in a series of scattered and disjunct colonies throughout western San Diego County, extending as far north as the Santa Ana Mountains of Orange County (Brown and McGuire 1983). Locally, it seldom occurs within 10 miles of the immediate coast. The largest known populations are in the Ramona-Escondido area. There are no documented locations within the City of Carlsbad.

b. Conservation Goals

Conserved Habitat: Carlsbad contains approximately 603 acres of oak or riparian habitats that potentially, but are unlikely to support the Harbison's Dun Skipper. Of this total, the HMP will conserve approximately 525 acres (87%) within preserve areas. In addition, approximately 90% conservation of potential Harbison's Dun Skipper habitat is expected outside of preserve areas due to a low potential for impacts, the City's no-net-loss of wetlands policy, the requirement for maximum avoidance of oak woodland (Table 9), and the additional protection afforded these habitats by state and federal wetlands regulations.

Conserved Populations/Location: No major/critical populations of the Harbison's Dun Skipper have been identified within the planning area.

Conserved Linkages: No populations of the Harbison's Dun Skipper are likely to be present within the linkages.

Measures to Reduce Threats to Species' Survival: Management measures will focus on restricting activities within the preserve that degrade or fragment this species' potential habitat.

Special Consideration: This species is unlikely to be present within the City due to absence of documented locations.

c. Expected Impacts

Direct Impacts: Direct impacts to the Harbison's Dun Skipper are expected to be negligible due to the unlikely occurrence of the species within the planning area, the adequately conserved potential habitat within the HMP preserve system and the City's no-net-loss of wetlands policy.

Indirect Impacts: Indirect impacts to the Harbison's Dun Skipper are expected to be negligible due to the unlikely occurrence of the species within the planning area.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to the absence of the species within the City; the 87% conservation of riparian forest, riparian woodland and oak woodland habitats, potential habitats of the species; additional protection afforded wetland habitat by federal and state regulations; and the City's no-net-loss of wetlands policy.

26. *Lycaena hermes*, Hermes Copper

(Narrow Endemic species)

a. Habitat/Distribution

Hermes Copper is a southern California endemic with an exceedingly restricted range (Emmel and Emmel 1973). Its known distribution includes western San Diego County and a small portion of adjacent northern Baja California, Mexico. Hermes Copper is always confined to the vicinity of its larval host plant redberry (*Rhamnus crocea*), and also requires the flowers of flat-topped buckwheat or species with similarly available nectar (Thorne 1963). There are no documented locations within the MHCP area; it is unlikely to be present within the planning area.

b. Conservation Goals

Conserved Habitat: Carlsbad contains approximately 4,347 acres of habitats that potentially support Hermes Copper. Of this total, the HMP will conserve approximately 2,847 acres (65%).

Conserved Populations/Location: No major/critical populations of the Hermes Copper have been identified in the planning area. Conserved habitat within Core Area 3, 5, and 7 could support individuals of this species, although it is unlikely due to the absence of documented observations of the species. Conservation of large blocks of CSS and chaparral likely would result in conservation of most potential locations of this uncommon species.

Conserved Linkages: The regional linkages to chaparral and coastal sage scrub habitat east and south of the City, as well as Link C, provide the best connections for the potential occurrence of this species.

Measures to Reduce Threats to Species' Survival: Management measures will focus on restricting activities within the preserve that degrade or fragment this species' potential habitat.

Special Consideration: This species is unlikely to be present within the City.

c. Expected Impacts

Direct Impacts: Direct impacts to the Hermes Copper are unlikely to occur due the absence of known locations. Although unlikely, impacts could result from the loss of coastal sage scrub and chaparral habitat.

Indirect Impacts: Indirect impacts to the Hermes Copper could result from the increased fragmentation of this species' potential habitat.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to absence of the species from the planning area; adequate conservation of coastal sage scrub and chaparral habitats; and the configuration of these conserved habitats, including substantial conservation of core areas 3 and 7; and conservation through designation of the species as a Narrow Endemic.

27. *Streptocephalus woottoni,* Riverside Fairy Shrimp

(Narrow Endemic species)

a. Habitat/Distribution

Riverside Fairy Shrimp occupy pools in which the water persists into April or May and reaches a minimum depth of 30 centimeters (about 1 foot) at filling (Eng, Belk, and Erikson 1990). The species has also been observed in shallower pools on MCB Camp Pendleton (Ogden unpublished data). It is known from only five general localities in southern California: five pools in the vicinity of Temecula and Rancho California, Riverside County (Eng, Belk, and Erikson 1990), one pool on NAS Miramar (Simovich and Fugate 1992), one pool on Otay Mesa (Simovich and Fugate 1992), pools in Carlsbad, and numerous pools on Camp Pendleton (Ogden unpublished data). It also has been collected in Baja California, Mexico (Brown, Wier, and Belk 1994).

b. Conservation Goals

Conserved Habitat: The HMP proposes to conserve 100% of known Riverside Fairy Shrimp habitat. The City's no-net-loss of wetlands policy, in conjunction with City guidelines requiring avoidance of vernal pool resources, will ensure that any additional vernal pools containing Riverside Fairy Shrimp that are discovered outside of preserve areas will be conserved. Federal and state wetlands regulations provide additional protection to vernal pool resources.

Conserved Populations/Locations: The HMP provides 100% conservation for the only known major/critical population of Riverside Fairy Shrimp in the planning area (Poinsettia Lane pools). In addition, any newly discovered populations will be conserved through the City's measures contained in Table 9, and designation of the species as a Narrow Endemic.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects; prohibiting the introduction of pesticides and other pollutants into vernal pools and vernal pool watersheds; protecting vernal pools from off-road vehicles and other activities that can crush eggs and destroy vernal pool habitat; managing the watersheds surrounding vernal pools to maintain water quality and vernal pool hydrology, in particular, the watershed of the Poinsettia Lane vernal pools..

Special Considerations: Specific ecological and management requirements of this species are poorly understood.

c. Expected Impacts

Direct Impacts: Because 100% of known Riverside Fairy Shrimp habitat will be conserved by the HMP, and any newly discovered vernal pools containing Riverside Fairy Shrimp are protected by measures contained in Table 9, no direct impacts to this species are expected to occur.

Indirect Impacts: Indirect impacts to this species could result from adverse changes in hydrology and the level of contaminants entering vernal pool watersheds. Potential indirect threats to the Riverside Fairy Shrimp will be minimized by site-specific management measures.

d. Basis for Take Authorization

The City is seeking take authorization for indirect impacts and for accidental direct impacts to the species. The HMP meets take authorization standards for this species due to the conservation of all known Riverside Fairy Shrimp locations; additional protection afforded wetland habitat by federal and state regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9 which seek to conserve newly discovered populations within the City; and specific management measures intended to reduce identified threats to conserved populations.

28. *Panoquina errans,* Salt Marsh Skipper

a. Habitat/Distribution

The Salt Marsh Skipper is restricted to coastal salt marshes and coastal estuaries from Los Angeles County south to the southern tip of Baja California, Mexico (Brown 1991). Within the MHCP area, this species occurs in salt marsh and salt pan habitats within Encinitas,

Carlsbad, and Oceanside.

b. Conservation Goals

Conserved Habitat: Buena Vista, Agua Hedionda, and Batiquitos lagoons contain approximately 151 acres of southern coastal salt marsh habitat within the City of Carlsbad. Of this total, approximately 140 acres (93%) are included within preserve areas. In addition, 100% conservation of salt marsh habitat is expected outside of preserve areas due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations

Conserved Populations/Locations: Salt Marsh habitat in each of the City's coastal lagoons contain major/critical populations of the Salt Marsh Skipper butterfly. The HMP will conserve 100% of salt marsh habitat.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects; controlling invasive, nonnative plants; maintaining salt marsh hydrology and water quality; and protecting salt marsh habitat from physical disturbances.

Special Considerations: Specific ecological and management requirements of this species are poorly understood.

c. Expected Impacts

Direct Impacts: No direct impacts to the Salt marsh Skipper are expected because salt marsh habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy.

Indirect Impacts: Indirect impacts to the Salt Marsh Skipper butterfly could result from the degradation of salt marsh habitat. These impacts could include an increase in adverse edge effects or changes in salt marsh hydrology or water quality. Potential indirect threats to the Salt Marsh Skipper will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization:

The HMP meets take authorization standards for this species due to 100% conservation of salt marsh habitat and all known Salt Marsh Skipper butterfly locations; additional protection afforded wetland habitat by federal and state regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

29. *Branchinecta sandiegoensis,* San Diego Fairy Shrimp

(Narrow Endemic species)

a. Habitat/Distribution

San Diego Fairy Shrimp are usually found early in the season after winter and spring rains in vernal pools on mesas, in roadside ditches, and in shallow (< 30 centimeters) tire ruts (Simovich and Fugate (1992)). Hatched eggs incubate at temperatures ranging from 10 to 15 °C. This species occurs in vernal pools from coastal Orange County to northern Baja California, Mexico, from near the coast (Orange County, Camp Pendleton) inland to Ramona

(Simovich and Fugate 1992; Brown, Wier and Belk 1994; USFWS 1997).

b. Conservation Goals

Conserved Habitat: The HMP conserves 100% of known San Diego Fairy Shrimp locations in the City. The City's no-net-loss of wetlands policy, in conjunction with City guidelines requiring avoidance of vernal pool resources, will ensure that any additional occupied vernal pools that are discovered outside of preserve areas will be conserved. Federal and state wetlands regulations provide additional protection to vernal pool resources.

Conserved Populations/Locations: The HMP provides 100% conservation for the only known major/critical population of San Diego Fairy Shrimp in the planning area (Poinsettia Lane pools).

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects; prohibiting the introduction of pesticides and other pollutants into vernal pools and vernal pool watersheds; protecting vernal pools from off-road vehicles and other activities that can crush eggs and destroy vernal pool habitat; managing the watersheds surrounding vernal pools to maintain water quality and vernal pool hydrology, in particular the watershed of the Poinsettia Lane vernal pools.

Special Considerations: Specific ecological and management requirements of this species are poorly understood.

c. Expected Impacts

Direct Impacts: Because 100% of San Diego Fairy Shrimp population is conserved by the HMP, and any newly discovered vernal pools are protected by measures contained in Table 9, no direct impacts to this species are expected to occur.

Indirect Impacts: Indirect impacts to this species could result from adverse changes in hydrology and the level of contaminants entering vernal pool watersheds. Potential indirect threats to the San Diego Fairy Shrimp will be minimized by site-specific management measures.

d. Basis for Take Authorization

The City is seeking take authorization for indirect impacts and for accidental direct impacts to the species. The HMP meets take authorization standards for this species due to the conservation of all known San Diego Fairy Shrimp locations (100%); additional protection afforded wetland habitat by federal and state regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9 which protects this species as a Narrow Endemic; and specific management measures intended to reduce identified threats to conserved populations.

30. *Cnemidophorus hyperythrus beldingi,* Orange-throated Whiptail

a. Habitat/Distribution

Orange-throated Whiptail are most often associated with open sage scrub habitats with a vegetative cover of about 50%, but are also found in ruderal areas, open chaparral, riparian rub, and oak woodlands. Orange-throated Whiptail is locally common within its range in the extreme southwest corner of California, which includes parts of Orange, Riverside, and San

Diego Counties, and northern Baja California at elevations below 2,800 feet. Documented Orange-throated Whiptail locations within the MHCP area include scattered sightings in east Oceanside, Carlsbad (e.g., Carlsbad Highlands, Aviara, and east La Costa), north and south Encinitas, and southwest and east Escondido (near Harmony Grove and San Pasqual Valley).

b. Conservation Goals

Conserved Habitat: Carlsbad supports approximately 5,546 acres of habitats that support or potentially support Orange-throated Whiptail lizards. Of this total, the HMP will conserve approximately 3,525 acres (64%) in preserve areas. Within biological core and linkage areas, approximately 3,244 acres (65%) of a total 4,974 acres will be conserved in preserve areas.

Because of its large size and links to core populations of Orange-throated Whiptails in areas to the southeast, Core Area 7 is expected to maintain a population of this species. Substantial conservation of this core area and its links to areas outside Carlsbad should contribute to the long-term, regional viability of the species. Pre-existing take authorizations in Core Area 7 conserve approximately 651 acres (55%) of the 1,190 acres of potential Orange-throated Whiptail habitat in this area. The HMP will also conserve a large amount of potential Orange-throated Whiptail habitat in Core Area 3. Approximately 647 acres (69%) of the 942 acres of potential habitat will be conserved in preserve areas. Because pre-existing conditions prevent the conservation of a functional linkage to Core Area 3 for the whiptail, the regional value of this area is diminished for this species. However, through active management and monitoring, Core Area 3 may provide some additional long-term habitat value for this species.

Conserved Populations/Locations: No major/critical populations of the Orange-throated Whiptail have been identified in the planning area. However, based on the ecological requirements of this species, it is likely that a major population exists in Core Area 7. Although Core Area 7 could sustain significant losses of habitat due to existing take authorizations, the remaining habitat should, with a minimum of active management, support enough breeding individuals to contribute reliably to the overall metapopulation stability of the species.

Conserved Linkages: At present, the best remaining linkage for this species is the regional linkage connecting Core Area 7 to core populations of Orange-throated Whiptails in areas southeast of the City. Habitat fragmentation and existing roadways have probably precluded or greatly constrained potential linkages for this species in other areas of the City.

Measures to Reduce Threats to Species' Survival: Management measures will focus on restricting activities within the preserve that degrade this species' habitat. Management measures may include a predator control program, as well as restrictions on livestock overgrazing and off-road vehicle use. A relocation program (possibly in Core Area 3 or 7) may be established to initiate new populations or enhance and maintain existing populations of this species.

Special Considerations: This species has been insufficiently surveyed in the subarea but is expected to be locally common in appropriate habitat, especially in large, unfragmented areas.

c. Expected Impacts

Direct Impacts: Direct impacts to the Orange-throated Whiptail could result from the loss of coastal sage scrub and chaparral habitats. In areas of the City not subject to pre-existing take

authorizations, approximately 30% of the total Orange-throated Whiptail habitat and 27% of the habitat within biological core and linkage areas may be subject to impacts outside of preserve areas.

Indirect Impacts: Indirect impacts to the Orange-throated Whiptail could result from the increased fragmentation of this species' habitat. Fragmentation of habitat can result in a less diverse landscape that provides fewer resources for the species, as well as greater demographic stochasticity and an increase in adverse edge effects, such as predation by domestic cats. Indirect impacts associated with habitat fragmentation will be minimized by management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to adequate conservation of 64% of coastal sage scrub, chaparral, riparian and oak woodland habitats; the configuration of these conserved habitats, including substantial conservation of core areas 3 and 7; preservation within a regional linkage connecting core area to core populations in areas southeast of the City; and specific management measures intended to reduce identified threats to conserved populations.

31. *Falco peregrinus anatum*, American Peregrine Falcon

a. Habitat/Distribution

This species has been extirpated from much of its former breeding range in North America. Only one pair has bred in San Diego County since the 1950s. During winter, Peregrine Falcons occur along coastal areas and at reservoirs in the county. Some of the locations where this species has been detected include Tijuana River Valley, San Diego Bay, San Diego River Valley, Mission Bay Park, Batiquitos Lagoon, Lake Hodges, San Pasqual River Valley and San Vicente Reservoir. Within the Carlsbad area, there is no potential for nesting or breeding sites. During the winter the peregrine probably occurs infrequently at the lagoons to forage.

b. Conservation Goals

Conserved Habitat: Carlsbad contains approximately two bodies of open water, Batiquitos Lagoon and Agua Hedionda Lagoon that potentially support the Peregrine Falcon as an occasional winter visitor. Of this potential foraging habitat the HMP will conserve approximately 100% of the open water habitat.

Conserved Populations/Location: No major/critical populations of the peregrine occur within the City of Carlsbad. Wintering visitors will be protected by conservation of areas of open water.

Measures to Reduce Threats to Species' Survival: Management measures will focus on stabilizing and maintaining the wintering foraging opportunities for the peregrine. Management will also focus on restricting activities within the preserve that degrade or disturb this species' foraging habitat.

Special Considerations: This species is unlikely to occur as a breeding population and likely only occurs within the City as an occasional winter visitor.

c. Expected Impacts

Direct Impacts: Direct impacts to the species are unlikely to occur due to the 100% preservation of the lagoons, the City's no-net-loss of wetlands policy, and additional protection afforded wetland habitat by federal and state regulations.

Indirect Impacts: Indirect impacts to the Peregrine Falcon are likely to be negligible and may occur due to disturbances and degradation of habitat adjacent to the lagoons.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to adequate conservation of winter foraging habitat within Batiquitos and Agua Hedionda lagoons; additional protection afforded wetland habitat by federal and state regulations; and the City's no-net-loss of wetlands policy.

32. *Passerculus sandwichensis beldingi,* Belding's Savannah Sparrow

a. Habitat/Distribution

Belding's Savannah Sparrow is restricted to salt marsh, mud flat, and low coastal strand vegetated habitats. This salt marsh sparrow is distributed along the coastline from Santa Barbara County south to northern Baja California. A year-round resident in San Diego County, the Belding's Savannah Sparrow population in California increased from 1,610 pairs in 1977 to 2,274 pairs in 1986 (Zembal et al. 1987). The population is expected to continue to increase due in part to the Batiquitos Lagoon Enhancement project.

b. Conservation Goals

Conserved Habitat: Buena Vista, Agua Hedionda, and Batiquitos lagoons contain approximately 151 acres of southern coastal salt marsh habitat within the City of Carlsbad. Of this total, an estimated 140 acres (93%) is located in preserve areas. In addition, 100% conservation of salt marsh habitat outside of preserve areas is expected due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded wetlands by state and federal regulations.

Conserved Populations/Locations: Salt marsh habitats within Agua Hedionda and Batiquitos lagoons contain major populations of Belding's Savannah Sparrow and are considered critical locations for this species in the planning area. These habitats are expected to be 100% conserved by the HMP.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects; controlling invasive, nonnative plants; maintaining salt marsh hydrology and water quality; and protecting salt marsh habitat from physical disturbances. Management measures may also include a predator control program and the enhancement or restoration of salt marsh habitat.

Special Considerations: None

c. Expected Impacts

Direct Impacts: No direct impacts to Belding's Savannah Sparrow are expected because

salt marsh habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy. However, lagoon maintenance or enhancement projects or essential public works projects may temporarily take Belding's Savannah Sparrow habitat. These impacts would be mitigated through creation of expanded Belding's Savannah Sparrow habitat.

Indirect Impacts: Indirect impacts to Belding's Savannah Sparrow could result from the degradation of salt marsh habitat. These impacts could include an increase in adverse edge effects or changes in salt marsh hydrology or water quality. Potential indirect threats to Belding's Savannah Sparrow will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to conservation of all major populations at Agua Hedionda and Batiquitos Lagoons; 100% conservation of salt marsh habitat; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

33. Speotyto *cunicularia hypugaea*, Burrowing Owl

a. Habitat/Distribution

The Burrowing Owl is a resident of open, dry grassland, pasture and agricultural fields, and open CSS with available perches such as rocks and fenceposts. This diurnal owl feeds primarily on insects, but also small mammals, reptiles, birds, and carrion. It utilizes California ground squirrel burrows and those of other burrowing mammals for nests and may dig its own burrow in soft soils. Although this species is described as occurring within agriculture fields, due to soil disturbance practices, the owl only occurs along the edges of agriculture fields. This species has declined because of loss of habitat, poisoning of ground squirrels, and collisions with automobiles. Burrowing Owl locations within San Diego County include San Marcos, Camp Pendleton, Mission Bay, Lower Otay Lake, North Island Naval Air Station, Otay Mesa, and the Tijuana River Valley. Within the Carlsbad area, Burrowing Owls have been recorded from the vicinity of Palomar Airport, the proposed municipal golf course, core areas 5 and 7, and along the north side of Batiquitos Lagoon.

b. Conservation Goals

Conserved Habitat: Carlsbad contains approximately 3,661 acres of habitats that support or potentially support the Burrowing Owl. Of this total, the HMP will conserve approximately 766 acres (21%).

Conserved Populations/Location: No major/critical populations of the Burrowing Owl occur within the planning area. The known locations within core areas 5 and 7 and along Batiquitos Lagoon are within hardline conservation areas. The location near Palomar Airport is provided an unknown level of protection at this time but likely would provide protection for one of the Burrowing Owl locations.

Measures to Reduce Threats to Species' Survival: Surveys shall be conducted within potential habitat to identify whether Burrowing Owls are present and may be impacted. If Burrowing Owls are determined to be present, the following measures shall apply. Development shall avoid direct impacts to the nest site to the maximum extent practical. If impacts are

unavoidable, any impacted individuals shall be relocated to a conserved area of suitable size and characteristics.

Special Consideration: The area has been insufficiently surveyed however, large population sizes are unlikely within the City.

c. Expected Impacts

Direct Impacts: Direct impacts to the Burrowing Owl may occur to the one known location. The other known locations appear to be located within proposed or existing hardline conservation areas. Due to the low conservation percentage of grasslands, impacts to undocumented locations also may occur. If impacts are expected to occur to the owl, the Burrowing Owl shall be relocated to avoid direct take.

Indirect Impacts: Indirect impacts to the Burrowing Owl could result from human disturbance, habitat degradation, and predation by domestic animals. A buffer of 300 feet shall be provided around preserved Burrowing Owl locations.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to the low numbers of the species present within the planning area and conservation of 667 acres (37%) of grassland habitat, potential habitat for the species. Surveys shall be conducted within potential habitat prior to any development. Impacts to documented nesting and foraging habitat shall be avoided and animals shall be relocated when impacts are unavoidable.

34. *Pelecanus occidentalis californicus,* California Brown Pelican

a. Habitat/Distribution

California Brown Pelican is restricted to open ocean, coastal shorelines, harbors, bays, and estuaries. California Brown Pelicans occur throughout the year as nonbreeders in San Diego County. Coronado Island is the closest breeding location of the local resident population associated with the Southern California Bight. Postbreeding and winter influx of pelicans from the Gulf of California into San Diego County considerably augments the resident population. Within the plan area, wintering pelicans can be expected along the coast and at lagoons.

b. Conservation Goals

Conserved Habitat: Buena Vista, Agua Hedionda, and Batiquitos lagoons contain approximately 934 acres of estuarine and salt marsh habitats that support or potentially support California Brown Pelicans. Of this total, approximately 917 acres (98%) are located in preserve areas. In addition, 100% conservation of pelican habitat is expected outside of preserve areas due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations.

Conserved Populations/Locations: The salt marsh and estuarine habitats in each of the City's coastal lagoons are considered critical locations for the California Brown Pelican. The HMP will conserve 100% of these habitats.

Measures to Reduce Threats to Species' Survival: Management measures will focus on

minimizing the contamination of pelican roosting and foraging areas with pesticides, oil, and other pollutants; reducing disturbances at important foraging and roosting areas; and maintaining the hydrology and water quality of coastal lagoon systems.

c. Expected Impacts

Direct Impacts: No direct impacts to the California Brown Pelican are expected because estuarine and salt marsh habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy. However, lagoon maintenance or enhancement projects or essential public works projects may temporarily take California Brown Pelican habitat. These impacts would be mitigated through creation of expanded California Brown Pelican habitat.

Indirect Impacts: Indirect impacts to the California Brown Pelican could result from changes in the hydrology or water quality of Carlsbad's coastal lagoon systems, loss of roosting sites, or increases in human disturbances. Indirect impacts to this species will be minimized by management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to 100% conservation of estuarine and salt marsh habitats; additional protection afforded wetland habitat by federal and state regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

35. *Sterna antillarum browni,* California Least Tern

a. Habitat/Distribution

The California Least Tern requires coastal beaches and saltflats for colonial breeding and intertidal and estuarine waters for foraging. The colonially breeding species is distributed along the coast from San Francisco Bay to Baja California. San Diego County supports nearly half of the state's breeding Least Terns. In northern San Diego County, only Batiquitos Lagoon supports breeding Least Terns (Fancher 1992).

b. Conservation Goals

Conserved Habitat: Buena Vista, Agua Hedionda, and Batiquitos lagoons contain approximately 934 acres of estuarine and salt marsh habitat that support or potentially support the California Least Tern. Of this total, approximately 917 acres (98%) are located in preserve areas. In addition, 100% conservation of salt marsh and estuarine habitat outside of preserve areas is expected due to a low potential for impacts, the City's no-net- loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations.

Conserved Populations/Locations: Estuarine and salt marsh habitats within Buena Vista, Agua Hedionda, and Batiquitos lagoons support major populations and are considered critical locations for the California Least Tern. These habitats are expected to be 100% conserved by the HMP.

Measures to Reduce Threats to Species' Survival: Management measures will focus on

minimizing adverse edge effects; controlling nonnative plants; predator control; maintaining of salt marsh and estuarine habitats; and protecting these habitats from physical disturbances. Restrictions will be placed on human activities near roosting and breeding areas during the breeding season. Management measures may also include the enhancement of habitat at Buena Vista and/or Agua Hedionda Lagoons to induce the initiation of new breeding colonies. Vegetation will be managed at existing nesting areas to maintain optimal conditions for Least Tern breeding.

c. Expected Impacts

Direct Impacts: No direct impacts to the California Least Tern are expected because salt marsh and estuarine habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy. However, lagoon maintenance or enhancement projects or essential public works projects may temporarily take California Least Tern habitat. These impacts would be mitigated through creation of expanded California Least Tern sparrow habitat.

Indirect Impacts: Indirect impacts to the Least Tern could result from the degradation of estuarine and salt marsh habitats. These impacts could include adverse changes in the hydrology or water quality of salt marsh and estuarine habitats as well as increases in adverse edge effects and human related disturbances. Potential indirect threats to the this species will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to conservation of major populations at Buena Vista, Agua Hedionda and Batiquitos Lagoons; 100% conservation of salt marsh and estuarine habitats; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

36. *Polioptila californica californica,* Coastal California Gnatcatcher

a. Habitat/Distribution

This species is closely associated with coastal sage scrub habitat, especially below 950-foot elevation, and on slopes less than 40 percent (ERCE 1990b; Ogden 1992b; 1993b). It is restricted to coastal plain counties of southern California. San Diego County supports over half of the U.S population. Significant concentrations of this species within northern San Diego County occur in Carlsbad, southwestern San Marcos, Oceanside, and Escondido adjacent to San Pasqual Valley, and the unincorporated areas adjacent to these cities.

Within Carlsbad, the number of existing coastal California Gnatcatcher pairs fluctuates seasonally and from year to year, based on weather, fires and a number of other factors. Based on current information, estimates of the total coastal California Gnatcatcher population in Carlsbad range from 100 to 150 pairs. California Gnatcatchers are supported by approximately 3,377 acres of coastal sage scrub, maritime succulent scrub, and coastal sage/chaparral habitats located within the City (Figure 26). Gnatcatcher locations shown on Figure 26 are a compilation of survey data from many years. The figure does not necessarily represent the Gnatcatcher population within Carlsbad at any given time. In addition, some properties have not been surveyed for Gnatcatchers, and some very recent survey data has not been included. Finally, the point data probably are redundant for some sites such as Holly Springs and Calavera

Heights, and probably too old to be reliable in areas that have developed such as Aviara. Therefore, Figure 26 should be understood as only a generalized view of Gnatcatcher population within Carlsbad at this time. Populations of Gnatcatchers within Carlsbad are important to the overall viability of the regional California Gnatcatcher metapopulation, because they represent a critical link in the distribution of the species. Although in areas south and north of Carlsbad the species inhabits habitat up to 20 miles from the coast, various factors, including topographic and development patterns, concentrate Gnatcatcher populations to within about 3 to 4 miles of the coast in northern San Diego County (Spencer and Mock, in press).

From a regional perspective, the coastal cities of Carlsbad and Oceanside constitute a multi-generational linkage connecting populations of Gnatcatchers in Orange and Riverside counties with populations to the south and east of Carlsbad. The distribution of Gnatcatchers, coastal sage scrub habitats, and other vegetative communities within Carlsbad suggests that, at present, the City's Gnatcatcher population remains demographically and genetically viable as part of the regional metapopulation.

b. Conservation Goals

Conserved Habitat: Carlsbad contains a total of 3,377 acres of coastal sage scrub habitats (including maritime succulent scrub and mixed coastal sage scrub/chaparral) that support or potentially support California Gnatcatchers, or provide dispersal, or foraging habitat. Of this total, approximately 2,146 acres (64%) will be conserved within preserve areas. Of the 3,054 acres of coastal sage scrub located within biological core and linkage areas, 64% will be conserved within preserve areas.

Additional conservation for this species will be achieved by the enhancement and restoration of coastal sage scrub habitats within preserve areas. Priority will be placed on the creation of breeding opportunities for this species within constrained linkages.

Conserved Populations/Locations: Based on the total 214 point localities that are in the data base, a total 127 points (59%) will be conserved. Two major/critical Gnatcatcher populations are located in the planning area. In Core Area 3, which is the primary stepping stone/breeding area in the Carlsbad-Oceanside corridor, approximately 70% of the known Gnatcatcher locations will be conserved. In Core Area 7, which has the largest single population, approximately 45% of the known Gnatcatcher locations will be conserved in preserve areas. Gnatcatcher conservation in Core Area 7 is limited by pre-existing take authorizations. Within Core Area 4, approximately 43% of the known Gnatcatcher locations will be conserved in preserve areas. This area includes the proposed municipal golf course and environs, which had a population of approximately 15 pairs estimated in 1998. Outside of these major/critical Gnatcatcher population areas, additional known Gnatcatcher pairs are expected to be conserved in smaller patches of coastal sage scrub.

Conserved Linkages: Conservation planning for the California Gnatcatcher has focused primarily on the maintenance and enhancement of functional regional linkages that would ensure long-term connectivity between large Gnatcatcher populations that exist to the north and south of the City. Planning for the Gnatcatcher has focused conservation efforts on the maintenance and enhancement of Core Area 3 in northeastern Carlsbad and Linkage Areas A, C, D. To increase the effectiveness of this eastern linkage, coastal sage scrub habitat within linkage areas may be enhanced and restored to maximize breeding opportunities for Gnatcatchers. Maintaining stable populations of breeding Gnatcatchers in core areas 3 and 7 and providing breeding opportunities and functional corridors between these two core areas should ensure long-term regional demographic and genetic connectivity for this species.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing adverse edge effects associated with the fragmentation of coastal sage scrub habitats. Management measures will include a cowbird control program, a predator control program, and restrictions on livestock overgrazing and human disturbance. Management measures will also include a fire management program that is consistent with the Gnatcatcher's known ecological requirements and a habitat restoration/enhancement program targeted primarily on the enhancement and creation of additional breeding opportunities within constrained linkages.

c. Expected Impacts

Direct Impacts: Direct impacts to the Gnatcatcher could result from the loss of coastal sage scrub habitat used for nesting and foraging by Gnatcatchers. There are approximately 3,377 acres of coastal sage scrub habitats (including maritime succulent scrub and mixed coastal sage scrub/chaparral) within the City of Carlsbad. Of this total, approximately 36% may be subject to impacts outside of preserve areas. A larger proportion of the acreage subject to impacts is on properties subject to existing take authorizations in southeast Carlsbad.

Of the approximately 3,054 acres of coastal sage scrub habitats within biological core and linkage areas, approximately 41% may be subject to impacts outside of preserve areas. Approximately 50% of the coastal sage scrub subject to impacts in biological core and linkage areas are on properties subject to existing take authorization agreements. Hence, impacts to Gnatcatchers are expected to occur largely on properties over which the city no longer has planning control, particularly in biological core and linkage areas.

Indirect Impacts: Indirect impacts to the Gnatcatcher could result from the fragmentation of coastal sage scrub and other habitats used for dispersal and foraging. Fragmentation of Gnatcatcher habitat could result in a less diverse landscape that provides fewer breeding opportunities and other important resources for the species. Habitat fragmentation may result in more adverse edge-related effects and greater demographic stochasticity for Gnatcatcher populations. Indirect impacts associated with the fragmentation of coastal sage scrub habitats will be minimized by management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to adequate conservation of coastal sage scrub habitats, known species' locations, and critical regional linkages; a configuration of conserved habitats that contributes to regional metapopulation stability; and specific management measures intended to reduce identified threats to conserved populations.

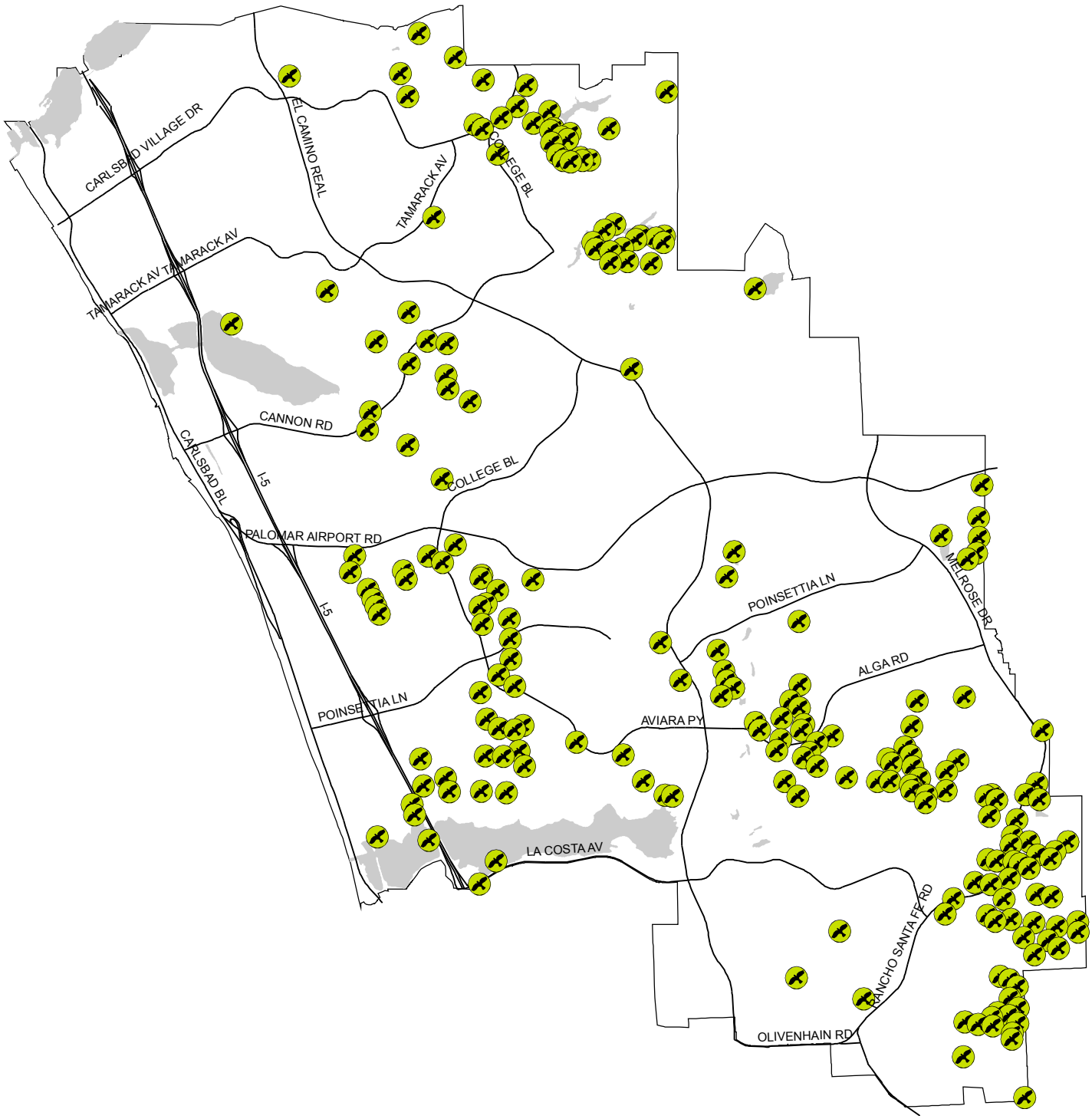

Figure 33
Gnatcatcher Locations

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CITY OF CARLSBAD
CALIFORNIA

Created: 1/27/2006
/cargis2/products/hmp/r18.06/Gnatcatcher.mxd

37. *Accipiter cooperii,* Cooper's Hawk

a. Habitat/Distribution

Dense stands of oak or riparian woodland are nesting habitats for Cooper's Hawks. Cooper's Hawk is distributed throughout much of the United States from southern Canada to northern Mexico. Potential breeding locations within the MHCP area include San Luis Rey River, Pilgrim Creek, and oak woodland habitats in San Marcos and Escondido.

b. Conservation Goals

Conserved Habitat: Of an estimated 603 acres of Cooper's Hawk breeding and primary foraging habitats within the City, approximately 525 acres (87%) will be located within preserve areas. Of an estimated 155 acres of these habitats located within biological core and linkage areas, approximately 143 acres (92%) will be conserved within preserve areas. In addition, 100% conservation of Cooper's Hawk breeding habitat is expected outside of preserve areas due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations.

Of an estimated 6,154 acres of secondary foraging habitat for this species, approximately 3,514 acres (57%) will be conserved within preserve areas. In biological core and linkage areas, approximately 3,042 acres (58%) of a total 5,201 acres will be conserved within preserve areas.

Conserved Populations/Locations: No major or critical populations of Cooper's Hawks have been identified within the planning area.

Measures to Reduce Threats to Species' Survival: Management measure will focus on minimizing disturbances in this species breeding habitat and will include restrictions on livestock overgrazing, removal of oak trees and riparian vegetation, building of trails or roads adjacent to or through breeding areas, and introduction of pesticides or other contaminants into the preserve. During the breeding season, documented nesting sites will be protected from human disturbance. Management measures for this species may also include the enhancement of oak and riparian woodland habitats that support or potentially support breeding Cooper's Hawks.

c. Expected Impacts

Direct Impacts: No direct impacts to the Cooper's Hawk's primary breeding and foraging habitats are expected because riparian forest, riparian woodland, and oak woodland habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy. However, direct impacts to the Cooper's Hawk could result from the loss of secondary upland foraging habitats, including coastal sage scrub, chaparral, and grassland habitats. Of the approximately 6,154 acres of these upland habitats in the City, an estimated 2,640 acres (43%) may be subject to impacts outside of preserve areas. Of the approximately 5,201 acres of these habitats in biological core and linkage areas, an estimated 2,159 acres (42%) may be subject to impacts outside of preserve areas. Much of this loss will occur in areas of southeast Carlsbad already subject to take authorization agreements.

Indirect Impacts: Indirect impacts to the Cooper's Hawk could result from the degradation of

it's breeding and foraging habitats. These impacts could include an increase in adverse edge effects; changes in the hydrology or water quality of riparian systems; and increases in human related disturbances. Potential indirect threats to the Cooper's Hawk will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to 100% conservation of riparian forest, riparian woodland, and oak woodland habitats; substantial conservation (57%) of additional foraging habitats (e.g., coastal sage scrub and chaparral); additional protection afforded wetland habitat by federal and state regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

38. *Sterna elegans,* Elegant Tern

a. Habitat/Distribution

Estuarine and intertidal zones of beaches are foraging habitat for Elegant Terns. Beaches and lagoon shoreline provide roosting habitat. This bird is an abundant summer resident in San Diego County. Elegant Terns first bred north of Baja California in 1959 on the dikes of the Western Salt Works in south San Diego Bay. This site is the only known colony in San Diego County, which has steadily grown in size since its discovery. No breeding colonies are known in the MHCP area. A colony has recently formed at the Bolsa Chica wetlands in Orange County.

b. Conservation Goals

Conserved Habitat: Buena Vista, Agua Hedionda, and Batiquitos lagoons contain approximately 934 acres of estuarine and salt marsh habitat that support or potentially support the Elegant Tern. Of this total, the HMP includes approximately 917 acres (98%) in preserve areas. In addition, 100% conservation of salt marsh and estuarine habitat outside of preserve areas is expected due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations.

Conserved Populations/Locations: Estuarine and salt marsh habitats within Buena Vista, Agua Hedionda, and Batiquitos lagoons are considered critical locations for the Elegant Tern. These habitats are expected to be 100% conserved by the HMP.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing adverse edge effects; controlling nonnative plants; maintaining the hydrology and water quality of salt marsh and estuarine habitats; and protecting these habitats from physical disturbances. Restrictions will be placed on human activities near roosting or potential breeding areas during the breeding season. Management measures may also include a predator control program and the enhancement of habitat to induce the initiation of new breeding colonies.

Special Considerations: Although no breeding colonies are known from the planning area, a breeding colony has recently formed at the Bolsa Chica wetlands in Orange County.

c. Expected Impacts

Direct Impacts: No direct impacts to the Elegant Tern are expected because salt marsh and estuarine habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy.

Indirect Impacts: Indirect impacts to the Elegant Tern could result from the degradation of estuarine and salt marsh habitats. These impacts could include adverse changes in the hydrology or water quality of salt marsh and estuarine habitats as well as increases in adverse edge effects and human related disturbances. Potential indirect threats to the this species will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to 100% conservation of salt marsh and estuarine habitats; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

39. *Passerculus sandwichensis rostratus,* Large-billed Savannah Sparrow

a. Habitat Requirements

Large-billed Savannah Sparrow is restricted to salt marsh, mud flat, and low coastal strand vegetation during the winter. This wintering subspecies of Savannah Sparrow typically inhabits coastal marshes and beaches and has remained scarce during the 1980s, although small numbers have appeared intermittently along the southern California coast and at the Salton Sea (Unitt 1984).

b. Conservation Goals

Conserved Habitat: Buena Vista, Agua Hedionda, and Batiquitos lagoons contain approximately 151 acres of southern coastal salt marsh habitat within the City of Carlsbad. Of this total, an estimated 140 acres (93%) are located within the preserve areas. In addition, 100% conservation of salt marsh habitat outside of preserve areas is expected due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded wetlands by state and federal regulations.

Conserved Populations/Locations: Salt marsh habitats within Agua Hedionda and Batiquitos lagoons are considered critical locations for this species in the planning area. These habitats are expected to be 100% conserved by the HMP.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing edge effects; controlling invasive, nonnative plants; maintaining salt marsh hydrology and water quality; and protecting salt marsh habitat from physical disturbances. Management measures may also include a predator control program and a habitat enhancement or restoration program designed to allow for the expansion of Large-billed Savannah Sparrow populations into new locations.

c. Expected Impacts

Direct Impacts: No direct impacts to Large-billed Savannah Sparrow are expected because

salt marsh habitats will be conserved by the HMP preserve system and the City's no-net loss of wetlands policy. In addition, specific adaptive management measures will address water quality and protect this species against detrimental edge effects from developing recreational impacts, and other direct and indirect impacts.

Indirect Impacts: Indirect impacts to the Large-billed Savannah Sparrow could result from the degradation of salt marsh habitat. These impacts could include an increase in adverse edge effects or changes in salt marsh hydrology or water quality. Potential indirect threats to the Large-billed Savannah Sparrow will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to 100% conservation of salt marsh habitat; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

40. *Vireo bellii pusillus,* Least Bell's Vireo

a. Habitat/Distribution

This migratory songbird breeds mostly in willow-mulefat-dominated riparian woodlands. It is restricted to riparian woodlands in southern California, with the majority of breeding pairs in San Diego, Santa Barbara, and Riverside Counties. Major vireo populations are currently on five rivers in San Diego County: Tijuana, Sweetwater, San Diego, San Luis Rey River/Pilgrim Creek, and Santa Margarita. Smaller populations occur on other drainages. Regional population has increased from 300 pairs in 1986 to 1,500 pairs in 1996, primarily due to the management of local cowbird populations (Kus 1997).

b. Conservation Goals

Conserved Habitat: Approximately 574 acres of riparian habitats support or potentially support Least Bell's Vireo in Carlsbad. Of this total, approximately 498 acres (87%) are located within preserve areas. Of an estimated 619 acres of vireo habitat located in biological core and linkage areas, approximately 546 acres (88%) are expected to be conserved in preserve areas. In addition, 100% conservation of riparian habitats outside of preserve areas is expected due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations.

Conserved Populations/Locations: No major populations or critical locations have been identified for this species in the planning area. However, in 1998 a new population was discovered in the Agua Hedionda Creek west of El Camino Real. (Varnus, 1997). All known point locations for the Least Bell's Vireo will be conserved within preserve areas.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing activities within the preserve that degrade riparian forest, riparian woodland, and riparian scrub habitats. Management measures may include restrictions on livestock overgrazing; the alteration or clearing of riparian vegetation; programs to control exotic invasive vegetation, nest parasitism by brown-headed cowbirds, and nest predation by introduced predators or unnaturally high populations of native predators. Management measures will also maintain the hydrology and water quality in riparian habitats and restrict

human activities in vireo-occupied habitat during the breeding season (April 15 to September 15). Vireo habitat may be restored or enhanced where appropriate and in consideration of the ecological requirements of other sensitive riparian-dependent species (e.g., Southwestern Willow Flycatcher).

c. Expected Impacts

Direct Impacts: No direct impacts to the Least Bell's Vireo are expected because riparian forest, riparian woodland, and riparian scrub habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy.

Indirect Impacts: Indirect impacts to the Least Bell's Vireo could result from the degradation of riparian habitats, including increases in adverse edge effects (such as cowbird nest parasitism) and changes in the hydrology or water quality. Potential indirect threats to the this species will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to 100% conservation of riparian forest, riparian woodland, and riparian scrub habitats; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

41. *Rallus longirostris levipes,* Light-footed Clapper Rail

a. Habitat/Distribution

This subspecies is restricted to coastal salt marshes of southern California. Breeding pairs have been found at 22 marshes since 1980, but the number of marshes with breeding populations has declined; Clapper Rails were found in only 11 marshes in 1991. Within northern San Diego County area, Clapper Rails have been documented in the salt marshes of Buena Vista, Agua Hedionda and San Elijo Lagoons, and at Guajome Lake (Zembal 1992).

b. Conservation Goals

Conserved Habitat: Buena Vista, Agua Hedionda, and Batiquitos support approximately 151 acres of southern coastal salt marsh habitat. The HMP includes approximately 140 acres (93%) of this habitat within preserve areas. In addition, 100% conservation of salt marsh habitat outside of preserve areas is expected due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations.

Conserved Populations/Locations: Salt marsh habitat associated with Buena Vista, Agua Hedionda, and Batiquitos lagoons have been identified as critical locations for the this species. The HMP will conserve 100% of salt marsh habitat in these areas.

Measures to Reduce Threats to Species' Survival: Management measures will focus on controlling nonnative plants, maintaining the hydrology and water quality of salt marsh habitat, and protecting salt marsh habitat from physical disturbances. Human activity will be restricted near nesting habitat during the breeding season (April 1 through August 31). Management measures may also include a predator control program and the restoration and enhancement of salt marsh habitat. Where it is deemed appropriate, Light-footed Clapper Rails may be

introduced into suitable, unoccupied habitat, and nesting substrates (nesting platforms) may be provided.

Special Considerations: Freshwater marsh habitats upstream from salt marshes are commonly used by Clapper Rails during fall and winter. These are also conserved by the HMP.

c. Expected Impacts

Direct Impacts: No direct impacts to the Light-footed Clapper Rail are expected because salt marsh habitat will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy.

Indirect Impacts: Indirect impacts to the Clapper Rail could result from the degradation of estuarine and salt marsh habitats. These impacts could include adverse changes in the hydrology or water quality of coastal lagoon systems. Potential indirect threats to the rail will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization:

The HMP meets take authorization standards for this species due to 100% conservation of salt marsh habitat; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

42. *Pandion haliaetus,* Osprey

a. Habitat/Distribution

Osprey habitat includes coastal estuaries and large lakes and reservoirs that support forage fish populations. Ospreys are a widely distributed species in North America, but are an uncommon wintering species and are relatively rare during the breeding season in San Diego County. Ospreys have been recorded at Agua Hedionda Lagoon and Lake Hodges.

b. Conservation Goals

Conserved Habitat: In the City of Carlsbad, approximately 850 acres of Osprey habitat are associated with the Buena Vista, Agua Hedionda, and Batiquitos lagoon systems. The HMP includes approximately 827 acres (97%) of this habitat within preserve areas. Of an estimated 837 acres of habitat located within biological core and linkage areas, approximately 826 acres (99%) are located within preserve areas. In addition, 100% conservation of this species' habitat outside of preserve areas is expected due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations.

Conserved Populations/Locations: Buena Vista, Agua Hedionda, and Batiquitos lagoons have been identified as critical locations for this species. The HMP will conserve 100% of Osprey habitat in these areas.

Measures to Reduce Threats to Species' Survival: Management measure will focus on maintaining lagoon system hydrology and water quality and restricting activities within the preserve that could disturb Osprey nesting activities. Management techniques, such as the provision of nesting platforms adjacent to foraging areas, may also be used to enhance

Osprey populations.

c. Expected Impacts

Direct Impacts: No direct impacts to the Osprey are expected because estuarine and open freshwater habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy.

Indirect Impacts: Indirect impacts to the Osprey could result from the degradation of estuarine and open freshwater habitats. These impacts could include adverse changes in the hydrology or water quality of coastal lagoon systems. Potential indirect threats to the Osprey will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to 100% conservation of estuarine and open freshwater habitats; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

43. *Aimophila ruficeps canescens*, Southern California Rufous-crowned Sparrow

a. Habitat/Distribution

The Rufous-crowned Sparrow occurs primarily in coastal sage scrub and has declined as a result of habitat loss. Rufous-crowned Sparrows occur particularly on steep, rocky slopes with sparse brush intermixed with grassland. This species forages on the ground in herbage and in litter beneath shrubs for seeds, insects, spiders, and grass and forb shoots. Although the Rufous-crowned Sparrow tends to be well associated with occurrences of the California Gnatcatcher, within Carlsbad population numbers are very low and the species is recorded only for the College Blvd./Alga Road corridor north and south of Palomar Airport Road and at Calavera Lake. It is likely that there are other occurrences of the Rufous-crowned Sparrow within coastal sage scrub in the planning area.

b. Conservation Goals

Conserved Habitat: The records and habitat usage for Rufous-crowned Sparrows tend to overlap well with California Gnatcatchers and conservation of the Gnatcatcher likely would serve sparrows as well. Carlsbad contains approximately 3,377 acres of coastal sage scrub habitat that support or potentially support Rufous-crowned Sparrows. Of this total, the HMP will conserve approximately 2,146 acres (64%).

Conserved Populations/Location: No major/critical populations of the Rufous-crowned Sparrow are present within the City of Carlsbad. Known locations are concentrated in the College Boulevard/proposed Alga Road area and receive protection within hardline or proposed hardline conservation areas. Due to the overlap of habitat use by the Rufous-crowned Sparrow and California Gnatcatcher, it is assumed that other Rufous-crowned Sparrows are located within coastal sage scrub habitat especially in Core Areas 3 and 7. These areas receive 70% and 30%, respectively, conservation of California Gnatcatcher locations by the preservation of substantial areas of coastal sage scrub habitat. This conservation of habitat likely preserves undocumented locations of Rufous-crowned Sparrows and conserves their potential habitat.

Conserved Linkages: Planning for preservation of the Gnatcatcher has focused conservation efforts on the maintenance and enhancement of Core Area 3 and Linkage areas A, C, and D.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing adverse edge effects associated with the fragmentation of coastal sage scrub habitats. Management measures will include a cowbird control program, a predator control program, and restrictions on livestock overgrazing and human disturbance. Management measures will also include a fire management program that is consistent with the ecological requirements of the habitat.

Special Considerations: Although it may be that the areas has been insufficiently surveyed for this species, large population sizes are unlikely within the City. Additional locations are probably present within areas that also support the California Gnatcatcher.

c. Expected Impacts

Direct Impacts: Direct impacts to the Rufous-crowned Sparrow could result from the loss of coastal sage scrub habitat that may be used for nesting and foraging. There are approximately 3,377 acres of coastal sage scrub habitats within the City of Carlsbad. Of this total, approximately 36% may be subject to impacts outside of preserve areas.

Indirect Impacts: Indirect impacts to the Rufous-crowned Sparrow could result from the fragmentation of coastal sage scrub habitats. Habitat fragmentation may result in more adverse edge related effects and greater demographic stocasticity for the potential Rufous-crowned Sparrow populations which are likely to be present but have not been documented. Indirect impacts associated with the fragmentation of coastal sage scrub habitat will be minimized by management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to adequate conservation of coastal sage scrub habitat, known species' locations, and regional linkages; a configuration of conserved habitats that contributes to regional potential metapopulation stability; and specific management measures intended to reduce identified threats to conserved populations.

44. *Empidonax trailii extimus,* Southwestern Willow Flycatcher

a. Habitat/Distribution

This species is restricted to willow-dominated riparian habitats in close proximity to surface water present during June (Sanders and Fleet 1989). Southwestern Willow Flycatchers have reappeared sporadically in disjunct riparian systems in southwestern California and the lower Colorado River. Current numbers remain significantly reduced from historical levels. Southern California's largest local population is on the south fork of the Kern River in Kern County, where numbers have slowly increased through the mid-1980s. Within northern San Diego County, small breeding concentrations of Willow Flycatchers persist along the San Luis Rey River and Pilgrim Creek in Oceanside (Unitt 1987).

b. Conservation Goals

Conserved Habitat: Approximately 574 acres of riparian habitats support or potentially support the Southwestern Willow Flycatcher in Carlsbad. Of this total, approximately 498

acres (87%) are located within preserve areas. Of an estimated 619 acres of flycatcher habitat located in biological core and linkage areas, approximately 546 acres (88%) are located in preserve areas. In addition, 100% conservation of riparian habitats outside of preserve areas is expected due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations.

Conserved Populations/Locations: No major populations or critical locations have been identified for this species in the planning area.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing activities within the preserve that degrade riparian forest, riparian woodland, and riparian scrub habitats. Management measures may include restrictions on livestock overgrazing; the alteration or clearing of riparian vegetation; programs to control exotic invasive vegetation, nest parasitism by brown-headed cowbirds, and nest predation by introduced predators or unnaturally high populations of native predators. Management measures will also maintain the hydrology and water quality of riparian habitats and restrict human activities in flycatcher-occupied habitat during the breeding season (May 1 to September 15). Willow Flycatcher habitat will be restored or enhanced where appropriate and in consideration of the ecological requirements of other sensitive riparian-dependent species (e.g., Least Bell's Vireo).

Special Considerations: Nesting sites for this species are usually near slow-moving streams, standing water, or seeps. Habitat most often used is mature, closed canopy riparian forest..

c. Expected Impacts

Direct Impacts: No direct impacts to the Southwestern Willow Flycatcher are expected because riparian forest, riparian woodland, and riparian scrub habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy.

Indirect Impacts. Indirect impacts to the Southwestern Willow Flycatcher could result from the degradation of riparian habitats, including increases in adverse edge effects and changes in the hydrology or water quality. Potential indirect threats to the this species will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to 100% conservation of riparian forest, riparian woodland, and riparian scrub habitats; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management

45. *Charadrius alexandrinus nivosus,* Western Snowy Plover

a. Habitat/Distribution

The breeding and winter distribution of the Western Snowy Plover in California is along coastal sandy beaches, dunes, estuarine habitat, and at interior lakes and salt flats such as Mono Lake. It is a common migrant and winter visitor and localized breeding resident in San Diego County (Unitt 1984). Breeding localities within northern San Diego County include San Luis Rey River mouth and Agua Hedionda, Batiquitos, and San Elijo Lagoons. A major

breeding population exists at Batiquitos Lagoon on nesting "islands" created by the Lagoon Enhancement project.

b. Conservation Goals

Conserved Habitat: Buena Vista, Agua Hedionda, and Batiquitos lagoons contain approximately 934 acres of estuarine and salt marsh habitat that support or potentially support Western Snowy Plover. Of this total, the HMP includes approximately 917 acres (98%) in preserve areas. In addition, 100% conservation of salt marsh and estuarine habitat outside of preserve areas is expected due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations.

Conserved Populations/Locations: Estuarine and salt marsh habitats associated with Buena Vista, Agua Hedionda, and Batiquitos support major/critical populations of the Western Snowy Plover. The HMP will conserve 100% of these habitats. The HMP will conserve all known nesting locations within the preserve.

Measures to Reduce Threats to Species' Survival: Management measures will focus on restricting activities within the preserve that degrade this species' foraging and nesting habitats by controlling nonnative plants, maintaining the hydrology and water quality of salt marsh and estuarine habitats, and protecting these habitats from physical disturbances. Human activity will be restricted near nesting habitat during the breeding season (April 1 through August 31). Management measures may also include a predator control program and the restoration and enhancement of breeding areas.

c. Expected Impacts

Direct Impacts: No direct impacts to the Western Snowy Plover are expected because salt marsh and estuarine habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy.

Indirect Impacts: Indirect impacts to the Snowy Plover could result from the degradation of estuarine and salt marsh habitats. These impacts could include adverse changes in hydrology or water quality, and increases in adverse edge effects and human related disturbances. Potential indirect threats to the Snowy Plover will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to complete (100%) conservation of major and critical populations in existing hardline conservation areas; 100% conservation of salt marsh and estuarine habitats; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

46. *Plegadis chihi,* White-faced Ibis

a. Habitat/Distribution

This ibis nests and forages in brackish and freshwater marsh habitats. San Diego County represents the southern extreme of the west coast distribution. The White-faced Ibis occurs

regularly in small numbers in lower river valleys in San Diego County and is uncommon and localized in winter and a sporadic breeder on the coastal slope. Within the MHCP area, recent breeding colonies include Buena Vista Lagoon and Guajome Lake.

b. Conservation Goals

Conserved Habitat: Of the estimated 214 acres of freshwater marsh habitat in the City, approximately 189 acres (88%) will be located within preserve areas. Of the estimated 184 acres of habitat located in biological core and linkage areas, approximately 176 acres (96%) will be located within preserve areas. In addition, 100% conservation of freshwater marsh habitat is expected outside of preserve areas due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations

Conserved Populations/Locations: The HMP conserves major populations of White-faced Ibis at Buena Vista and Batiquitos lagoons, including a critical breeding population at Buena Vista Lagoon.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing adverse edge effects; controlling invasive, nonnative plants; maintaining salt marsh hydrology and water quality; and protecting salt marsh habitat from physical disturbances, including restrictions on human activity at potential breeding colonies and associated foraging habitat during the early breeding period when courtship and nest building occur (March to June). Management measures may also include a predator control program and a habitat enhancement program designed to increase breeding and wintering populations of this species.

c. Expected Impacts

Direct Impacts: No direct impacts to the White-faced Ibis are expected because freshwater marsh habitat will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy.

Indirect Impacts: Indirect impacts to the White-faced Ibis could result from the degradation of freshwater marsh habitat. These impacts could include an increase in adverse edge effects or changes in marsh hydrology or water quality. Potential indirect threats to the White-faced Ibis will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to complete (100%) conservation of major populations at Batiquitos Lagoon and a critical breeding population at Buena Vista Lagoon; 100% conservation of freshwater marsh habitat; additional protection afforded wetland habitat by federal and state regulations; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.

47. *Icteria virens,* Yellow-breasted Chat

a. Habitat/Distribution

This species occurs in riparian woodlands and is considered an indicator species for potential

Least Bell's Vireo habitat and is an uncommon summer resident of riparian woodland/scrub of coastal plain and foothills of California. Within the MHCP area, documented Yellow-breasted Chat locations include San Luis Rey River, central Oceanside, lower Escondido Creek in Encinitas, and Kit Carson Park in Escondido.

b. Conservation Goals

Conserved Habitat: Approximately 574 acres of riparian habitats support or potentially support the Yellow-breasted Chat in Carlsbad. Of this total, approximately 498 acres (87%) is included within preserve areas. Of an estimated 619 acres of Chat habitat located in biological core and linkage areas, approximately 546 acres (88%) are included in preserve areas. In addition, 100% conservation of riparian habitats outside of preserve areas is expected due to a low potential for impacts, the City's no-net-loss of wetlands policy, and the additional protection afforded these habitats by state and federal wetlands regulations.

Conserved Populations/Locations: No major populations or critical locations have been identified for this species in the planning area.

Measures to Reduce Threats to Species' Survival: Management measures will focus on minimizing activities within the preserve that degrade riparian forest, riparian woodland, and riparian scrub habitats. Management measures may include restrictions on livestock overgrazing; the alteration or clearing of riparian vegetation; programs to control exotic invasive vegetation, nest parasitism by brown-headed cowbirds, and nest predation by introduced predators or unnaturally high populations of native predators. Management measures will also maintain the hydrology and water quality of riparian habitats and restrict human activities in Chat-occupied habitat during the breeding season. Yellow-breasted Chat habitat may be restored or enhanced where appropriate and in consideration of the ecological requirements of other sensitive riparian-dependent species (e.g., Least Bell's Vireo).

c. Expected Impacts

Direct Impacts: No direct impacts to the Yellow-breasted Chat are expected because riparian forest, riparian woodland, and riparian scrub habitats will be 100% conserved by the HMP preserve system and the City's no-net loss of wetlands policy.

Indirect Impacts: Indirect impacts to the Yellow-breasted Chat could result from the degradation of riparian habitats, including increases in adverse edge effects and changes in hydrology or water quality. Potential indirect threats to the this species will be minimized by preserve-level and site-specific management measures.

d. Basis for Take Authorization

The HMP meets take authorization standards for this species due to 100% conservation of riparian forest, riparian woodland, and riparian scrub habitats; the City's no-net-loss of wetlands policy and application of measures contained in Table 9; and specific management measures intended to reduce identified threats to conserved populations.